Rock Products

DEVOTED TO

Concrete and Manufactured Building Materials

Vol. VII | CHICAGO, ILL., DECEMBER 22, 1907 | No. 6

CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributers of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Aeme" and "Electroid" Branda Ready Roofing. Get our prices.

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Are digging **Cement Rock without blasting** and loading it on cars for the Burt Portland Cement Co. of Bellevue, Mich., for less than 12 cents per cubic yard, and they are operating the shovels at only half capacity. How much is it costing YOU? Better write today for information.

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MOUNT SAVAGE FIRE BRICK GOVERNMENT STANDARD.

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

Lime Kiln and Cement Kiln Construction

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

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CAPACITY, 60,000 PER DAY. ESTABLISHED, 1841.

Northwestern Clay Mfg. Co.

New Windsor, Illinois.

J. O. FREEMAN, Genl. Mgr.

Sewer Pipe

Drain Tile. Works: Griffin, Ill.

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Ottawa Silica Co.'s Washed White Flint Sand

Is used for sawing stone in more than a dozen states. Cuts more and lasts longer than any other sand on the market. Unexcelled for Roofing, Facing Cement Blocks, White Plaster, etc. Freight rates and prices on application.

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DEXTER Portland Cement THE NEW STANDARD

Sole Agents SAMUEL H. FRENCH & CO. Philadelphia

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Report of Northwestern Cement Users' Convention in Chicago.
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IS IDEAL FOR
Waterproofing Concrete Blocks
SAVES MONEY. TRY IT.

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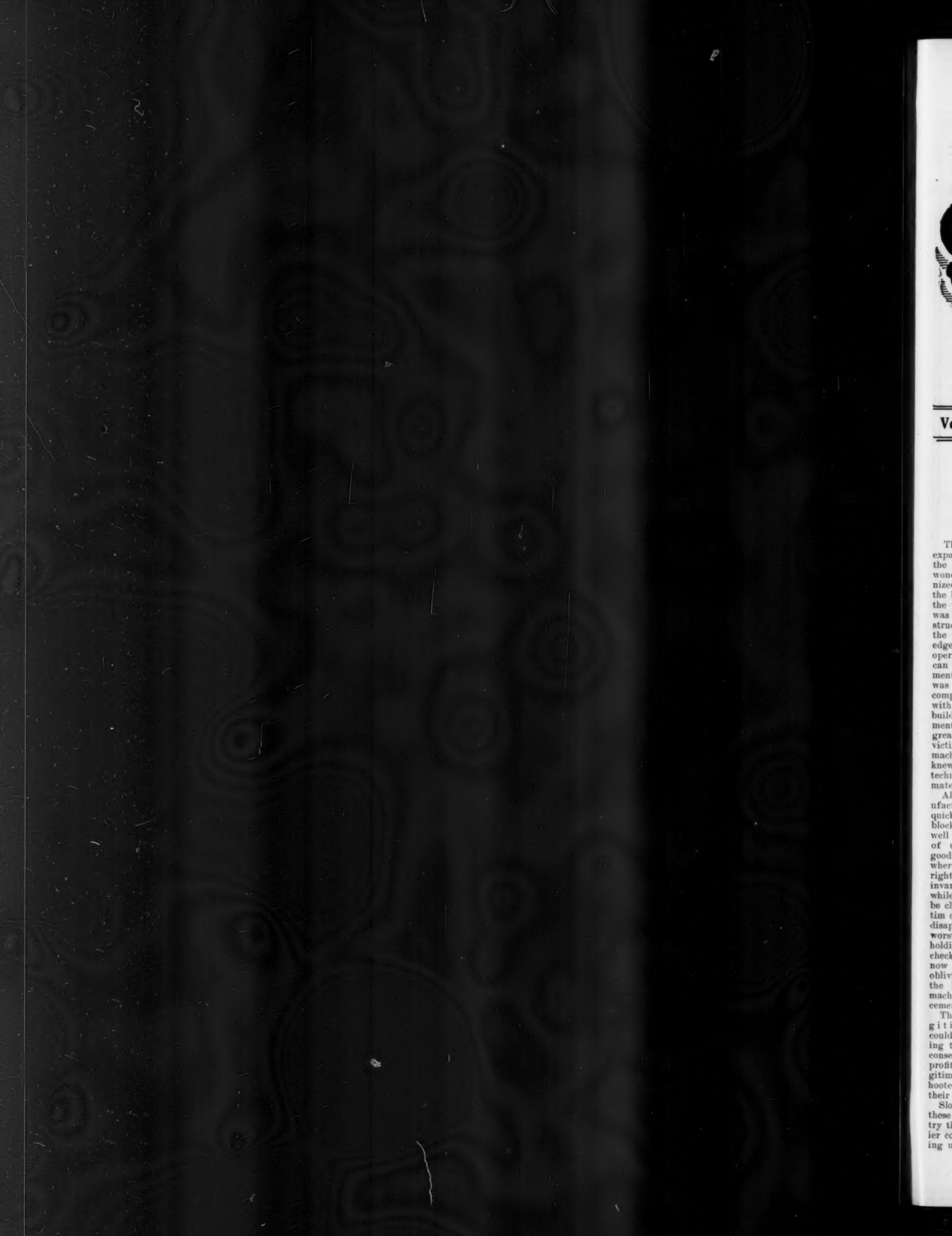
Sole Manufacturers. CHATTANOOGA, TENNESSEE



Rock Products

DEVOTED TO

Concrete and Manufactured Building Materials

Volume VII. CHICAGO, ILL., DECEMBER 22, 1907. Number 6.

CEMENT BLOCK CONSTRUCTION.

Finest Residence in the South Recently Completed with Concrete Stone Made on the "Hercules" Machine.

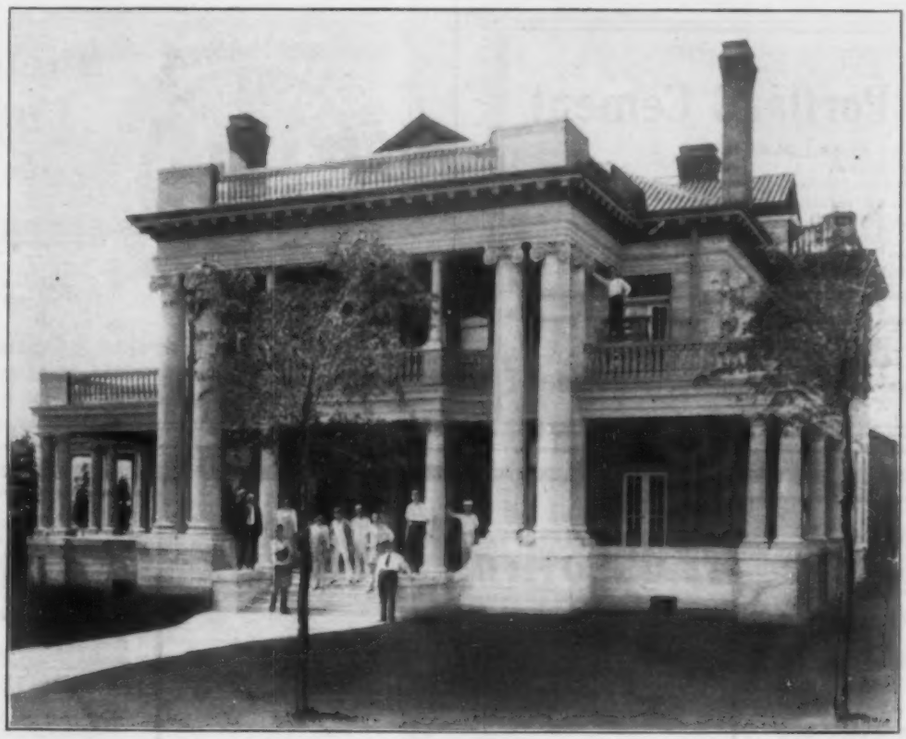
There is no more important branch of the ever-expanding cement industry of America than that of the cement building block. It is really one of the wonders of modern times, and was quickly recognized as such immediately upon its introduction to the building-material horizon. So very attractive did the proposition seem to the general public that it was easy to make people forget the value of construction experience and the indispensable knowledge of actual building operations which alone can contribute the element of success. There was a wild rush of incompetents, moneyless, with obscure ideas of building-material requirements, who were to a great extent themselves victims of unscrupulous machinery boosters who knew nothing of building technique or building-material requirements.

All of the worthy manufacturers, however, quickly learned to make blocks, good blocks, as well as the best method of using them, and a good measure of success where the conditions are right for the business has invariably been recorded, while all of those who can be classified as the "victim class" have naturally disappeared. Also the worst feature that was holding the industry in check has passed and is now rapidly passing to oblivion in the shape of the booster of "fake" machinery for making cement blocks.

The concern with a legitimate proposition could scarcely get a hearing two years ago. The conservative margin of profit contained in a legitimate business was hooted at then, and the designing of machines as to their practical adaptability was scorned.

Slowly at first, but none the less surely, all of these evils are disappearing, and a view of the industry this present year of 1907 shows it to be in healthier condition than ever before. Skillful builders, acting under the advice of trained architects and engineers, are putting up some very excellent work in all parts of the country, and these achievements challenge the attention of men with the most highly developed taste in structural design and balance.

As an example of the high degree of perfection that has been attained during the present year in the use of cement blocks we show photographs of the exterior and interior of the palatial residence of General John L. Bullis at San Antonio, Texas, recently completed. This house is constructed entirely of concrete in the form of hollow building blocks. It is a fine specimen of what can be accomplished by using the concrete block intelligently.



RESIDENCE OF GENERAL JOHN L. BULLIS, SAN ANTONIO, TEXAS.

Many architects have withheld from specifying the concrete block for residences of the higher class for the reason that they were not familiar with its possibilities. Much credit, therefore, is due to Harvey L. Page of San Antonio for his efforts in designing such an unusually attractive structure, employing the new material exclusively.

The owner of this building, General John L. Bullis, U.S.A., retired, conceived the idea of using concrete blocks for his residence, and very carefully investigated the whole matter of mechanical equipment and materials in order to produce the very highest type of concrete stone. He purchased and installed one of the reliable "Hercules" block machines, built by the Century Cement Machine Company of Rochester, N. Y., including extra parts for casting large watertable stone, as well as all those required for regular straight wall work.

All the stone was made under the personal supervision of General Bullis. The materials used were crushed stone, sand and cement for the back of the block; cement and granite chippings, passed through a fine screen, for the face, which naturally produced a stone of great strength and beauty. In the construction of this building something over 12,000 blocks were used. The foundation walls up to and three feet above the ground are 12 inches in thickness, while above this blocks 10 inches in thickness were used, the typical stone being 8 inches high by 24 inches long for the superficial face.

The body of the building is "plain-face" design, which appears to be sawed stone, while a deep bush-hammered design was used for quoins. The building is 68x80 feet and contains nineteen rooms. The main partitions are of concrete hollow blocks, carrying girder spans 17 feet in length. The roof is Spanish metal tile, while the handsome columns of the front porch are solid concrete.

Continued on page 41.

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Durability
Permanence

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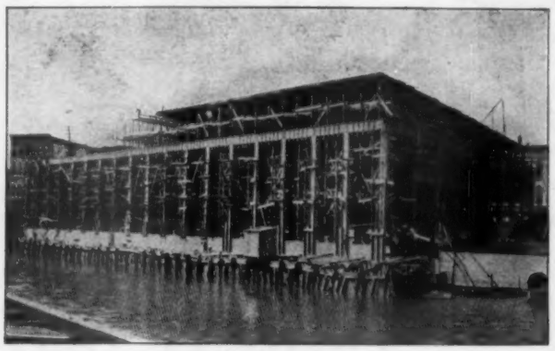

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85 per cent. thru 200
98 per cent. thru 100

The Finest Ground Portland Cement Manufactured

"Neat tests are of less value than those of the briquettes made with sand and cement. **The fineness of the cement is important, for the finer it is the more sand can be used with it.**"
[Abstract from "Specifications for Portland Cement," issued by the United States Navy Department, June 12, 1905.]

FINE GRINDING
OF
PORTLAND CEMENT
AND WHAT IT MEANS

For a proper understanding and full appreciation of the importance of fine grinding, it is necessary to explain that Portland Cement (as manufactured in the Lehigh Valley) is made from what is commonly understood as "Cement Rock," with the addition of sufficient limestone to give the necessary amount of lime. The rock is broken down and then ground to a fineness of 80 per cent to 90 per cent through a 200 mesh screen. This ground material passes through kilns and comes out in clinker. This is ground and **that part of this finely ground clinker that will pass a 200 mesh screen is cement;** the residue is still clinker. These coarse particles or clinkers will absorb water very slowly, are practically inert, and have very feeble cementing properties. **The residue on a 100 mesh screen is useless.**

Edison Portland Cement is ground 85 per cent through a 200 mesh screen,—10 per cent finer than other brands. This can be verified in any laboratory.

In a barrel of Edison Portland Cement, therefore, you get 85 per cent of Portland Cement and 15 per cent of clinker. In a barrel of other brands you get 75 per cent of cement and 25 per cent of clinker.

If you are buying a ton of coal, would you buy the coal containing 25 per cent of slate, or would you prefer the coal containing but 15 per cent of slate?

If, instead, you are buying iron ore, would you not give preference to ore that contained 10 per cent more units of iron?

Another point is worth considering and that is that the Edison Portland Cement Company make but one brand or quality, and that is the best.

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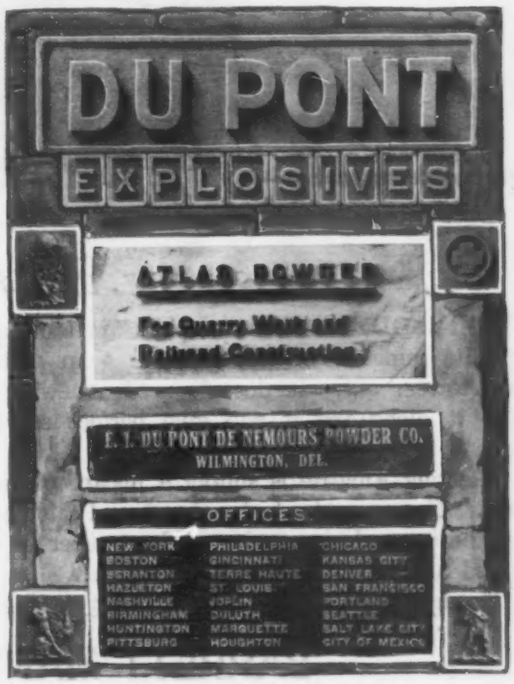

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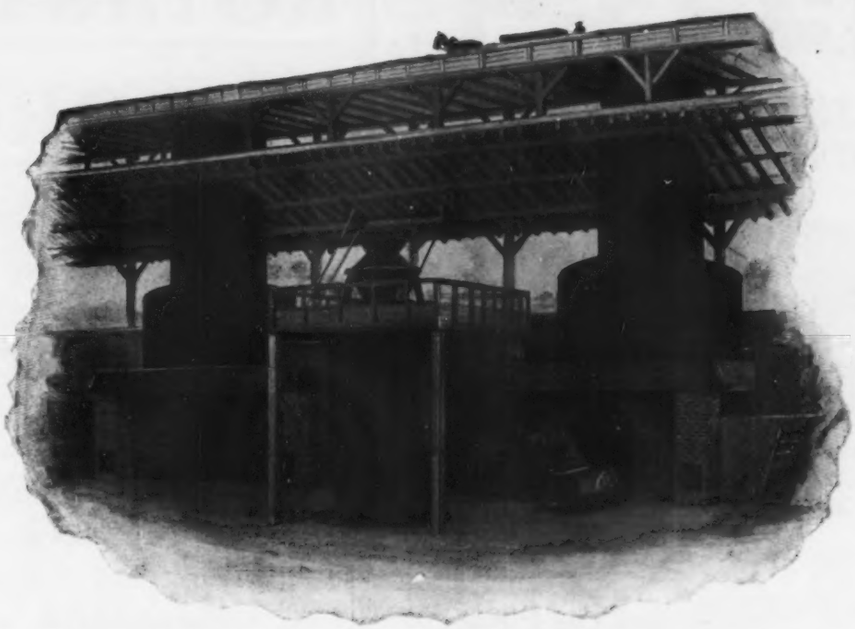

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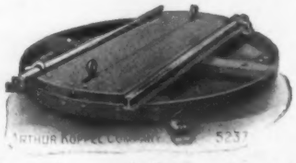

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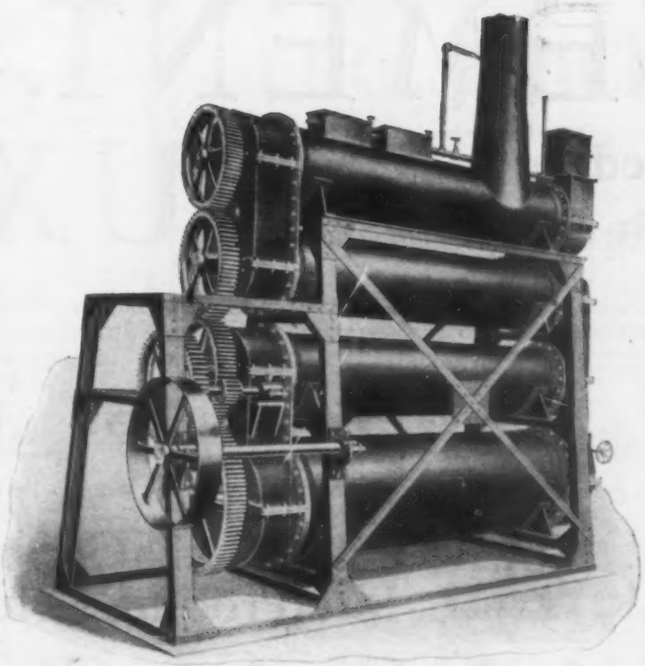
Than to Wish You Had

Events continually prove our contention that an obsolete old-fashioned hydrator may prevent the success of your plant long enough to pay for the **Kritzer Continuous Process** several times over.

Results secured by others have demonstrated the fact that our methods of determining the best plan to treat the prospective hydrating plant buyers lime is correct.

Tell us the kind of lime you have, the treatment that you used that proved a failure, and let us write you what you need. We take pride in solving difficult problems. We remodel old style plants into profit makers, or build you a new one if you prefer it.



THE KRITZER CONTINUOUS HYDRATOR
Makes a Noise Like a Dividend

Free Booklet and Specialists Advice Free

THE KRITZER COMPANY

WESTERN AVENUE AND SEVENTEENTH STREET

CHICAGO, ILL.

THE WOODVILLE WHITE LIME COMPANY
TOLEDO, OHIO

Largest Capacity of Hydrated Lime in the U. S.

Sales Agents **EDISON PORTLAND CEMENT**

Manufacturers of and Wholesale Dealers in

Lime, Lumber, Sewer Pipe and a Full Line of Builders Supplies.

OUR HIGH GRADE PRODUCTS

White Enamel Finish
Edison Portland Cement
Agricultural Lime
Polar Bear Lime
Lump O. K. Lime
Polar Bear Hard Wall Plaster

CEMENT-KILNS

Lined with Our **BAUXITE** Lining Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile
Fire Proofing, Flue Lining.

Laclede-Christy Clay Products Co.

ST. LOUIS, MO.

"IF IT IS **LIME** WE MAKE IT."

Lump - Barreled - Hydrated Ground.

STRONGEST IN OHIO.

We are not connected with any Trust or Combination.

WRITE US
PHONE US **The Scioto Lime and Stone Company, Delaware, Ohio**

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.
MANUFACTURERS OF THE

Celebrated "Cheshire" Finishing Lime.

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all

HIGH GRADE FINISHING WORK

Selling Department, 39 Cortlandt St., N. Y., C. J. CURTIN, Pres't.

The Buckeye Fire Clay Co.

Manufacturers of
Sewer Pipe, Flue Linings, Chimney Tops, Fire Brick, Grate Tile, Ground Fire Clay, Wall Coping, Etc.

UHRICHSVILLE, . . OHIO

HIGH GRADE

FIRE BRICK

For Cement Works, Lime Kilns, Cupolas, Steel and Iron Works of every description

Louisville Fire Brick Works, K. B. GRAHN, Prop., Highland Park, Ky. P.O.

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner Brand Louisville Cement, Portland Cements and Building Materials.

St. Louis, Mo.

Hand Made ═══ Hard Burnt

FIRE BRICK

——are the best for——
Lime and Cement Kilns

ADDRESS

Mitchell Clay Mfg. Co.

ALL SHAPES St. Louis, Mo. CATALOG

ROCKLAND-ROCKPORT LIME

The sand capacity is immense. Produces a rich mortar with great spreading qualities. A saving of labor and material. Sold by all the best building material dealers.

ROCKLAND-ROCKPORT LIME CO.
FULLER BLDG., NEW YORK.

The Hoosac Valley Lime & Marble Co.

ADAMS, MASS.

Manufacturers of

....High-Grade Finishing Lime....

Noted For Its Quick and Even Slacking.

Now in Use in Some of the Largest Buildings Being Erected in New York City.

THOS. D. CONNORS, President. Telephone Connection **New York Office: 1123 Broadway.**

DOES NOT DETERIORATE WITH AGE.

EXCELSIOR HYDRATED LIME
The Cleveland Builder's Supply Co.
CLEVELAND OHIO

WILL NOT SLACK. ALWAYS READY FOR USE.

Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for years by the largest users of Hydrate in the country.

SEND FOR PRICES.
MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

The

Strongest White Lime

ON THE MARKET

Uniform Quality — Finest Grain

The American Clay Machinery Co.
WILLOUGHBY, OHIO

May 16, 1906.

The Mitchell Lime Co.,
Mitchell, Ind.

Dear Sirs:-

Replying further to your favor of the 8th inst requesting us to advise you the result of practical test of your lime in the manufacture of sand-lime brick. We are pleased to advise you that the lime hydrated easily and the brick made from it were first-class in every respect.

We have forwarded some samples of it to Mr. Elkus of the Indianapolis Composite Brick Co. and he can probably advise you further.

Very truly yours,
The American Clay Machinery Co.
by W. J. Burke.

MITCHELL LIME COMPANY

MITCHELL, INDIANA

THE OHIO AND WESTERN LIME CO.

HUNTINGTON, INDIANA
MANUFACTURERS OF

LUMP LIME

ALSO, DIAMOND BRAND SUPERIOR WHITE FINISH

A HYDRATED LIME

AND A GROUND AND FERTILIZER LIME

Capacity 4,000 barrels or 10,000 bushels per day. Capacity of Hydrated Lime, 120 tons per day. Our LUMP LIME as well as our HYDRATED LIME is the very best obtainable for all purposes for which a good lime is needed in erecting buildings. Our HYDRATED LIME is absolutely the best finishing lime on the market.

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.

ASH GROVE
WHITE LIME ASSOCIATION
MANUFACTURERS OF
High Grade White Lime.
KANSAS CITY, MISSOURI.

The Kelley Island Lime and Transport Co.

CLEVELAND, OHIO.

Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

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THE LARGEST LIME MANUFACTURERS IN THE WORLD.

A. & C. Stone & Lime Co.

MANUFACTURERS OF

CRUSHED STONE AND WHITE LIME

TOTAL CAPACITY CRUSHED STONE 4000 TONS DAILY.

Plants: GREENCASTLE, IND. RIDGEVILLE, IND. PORTLAND, IND.

LIME KILNS AT PORTLAND, IND.

General Office: 17 N. Penn. Street INDIANAPOLIS

Tell 'em you saw it in ROCK PRODUCTS.

AUSTIN GYRATORY CRUSHER

The World's Leading Rock and Ore Breaker

The Only Automatically Lubricated Gyratory Crusher

8 Sizes—Capacities 40 to 2000 Tons.

Simple Construction (Saving Repairs)
Economically Operated (Saving Expense)
Correct Design (Saving Power)
Result: EFFECTIVE, DURABLE AND MAXIMUM CAPACITY.

Plans and Specifications Submitted for Any Size Plant.
Write for Catalogue.

AUSTIN MANUFACTURING CO., Chicago
New York Office, Park Row Building

DRYERS
OF EVERY TYPE
CONSTRUCTED FOR ALL PURPOSES.
AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS
UNITED STATES DRYING ENGINEERING CO.
66-70 BEAVER ST., NEW YORK, U.S.A.

MACHINERY

FOR

Industrial Plants

We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock-crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

Catalogue No. 28.

H. W. Caldwell & Son Co.
17th St. and Western Ave., Chicago

95 Liberty St., New York City
Woodward, Wight & Co., Ltd., New Orleans, La.

Do You Have Cars to Haul?

The Davenport Locomotive Will Save Money

Special Designs for Special Purposes
Any Size, Any Gauge, Any Weight
Write for Prices and Particulars

DAVENPORT LOCOMOTIVE WORKS
DAVENPORT, IOWA

Timber Hangers
ANCHOR STRAPS

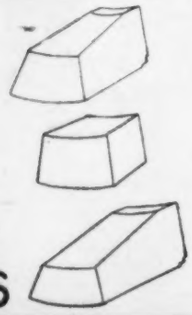
For Wood, Steel or Concrete Construction. Special Hangers to suit any conditions.

CHAS. MULVEY MFG. CO.
17 to 21 South Jefferson Street, :: CHICAGO, ILL.

ROTARY CEMENT LINERS.

ASHLAND FIRE BRICK CO.
ASHLAND, KY.

IRONTON CROWN.



LIME KILN LININGS.

GROUND CLAY FOR WALL PLASTER AND BOILER SETTINGS

DIRECT HEAT

DRYERS

—FOR—

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

American Process Company
62-64 William Street, NEW YORK CITY

RUGGLES - COLES

DRYERS

RUGGLES-COLES ENGINEERING CO.
NEW YORK CHICAGO

Cummer Dryers

See Other Ad. Page 75

THE F. D. CUMMER & SON CO., Cleveland, Ohio.

BRICK and MORTAR **COLORING**

After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label."
CORRESPONDENCE SOLICITED.

CLINTON METALLIC PAINT CO., CLINTON, N. Y.

MILWAUKEE BAG CO.

MILWAUKEE, WIS.
HIGH GRADE PRINTERS & MANUFACTURERS OF
DUCK, OSNABURG AND JUTE CEMENT BAGS.
DEALERS IN
PAPER BAGS & TWINES.
WRITE FOR PRICES & SAMPLES.

J. K. WILLIAMS & CO.

EASTON, PA.

The Largest Manufacturers in the U. S.

BRICK AND MORTAR
COLORING
OF ALL SHADES

CORRESPONDENCE SOLICITED. SAMPLES AND ESTIMATES CHEERFULLY FURNISHED ON APPLICATION.

S. W. SHOOP & CO.

ALTOONA, PENNSYLVANIA

Designers and Builders of the
SHOOP IMPROVED PATENT LIME KILNS.
Designing and Installing a Specialty.

Lime Kilns and Plant of Blair Limestone Co., Canoe Creek, Pa.
Designed by
Henry S. Spackman Engineering Company
42 N. 16th Street Philadelphia, Pa.

ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.

DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

Volume VII. **CHICAGO, DECEMBER 22, 1907.** **Number 6.**

THE FRANCIS PUBLISHING COMPANY

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HENRY C. WHITAKER, Barre, Vt. BENJ. F. LIPPOLD, New York City.

Communications on subjects of interest to any branch of the stone industry are solicited, and will be paid for if available.

Every reader is invited to make the office of Rock Products his headquarters while in Chicago.

Editorial and advertising copy should reach this office at least five days preceding publication date.

TERMS OF ANNUAL SUBSCRIPTION.

In the United States and Possessions and Mexico.....$1.00

In the Dominion of Canada and all Countries in the Postal Union..... 1.50

Subscriptions are payable in advance, and in default of written orders to the contrary, are continued at our option.

Advertising rates furnished on application.

BRANCH OFFICES:

NEW YORK CITY, Room 405 St. James Bldg. NEW ENGLAND, 16 Merchant St., Barre, Vt.

PHILADELPHIA, PA., 916 Rothschild Bldg.

Entered as second-class matter at the Post Office in Chicago, Ill.

Attractive, forceful information will increase the dealer's dividends.

Be of service to the industry with which you are connected and create some new business.

ROCK PRODUCTS is the open door to the building material trade of the world. The latch-string is out.

If you have any doubt as to the durability of concrete look at some of the street railway construction in Chicago.

ROCK PRODUCTS sells its advertising space on a "value received" basis. Include it in your 1908 appropriations.

With materials at present valuations, building and construction operations should show a large increase in 1908.

You know the acorn and oak story. So it is with cement. Get busy and join the procession to increase the consumption.

ROCK PRODUCTS always assists the trade in working out its problems. Don't be bashful about addressing us on any subject.

For less than three cents a week ROCK PRODUCTS will introduce you to everything new in building materials and how to manufacture them.

The lime manufacturers are prosperous as a rule, and it is believed the new year will show greater prosperity, due to the increased friendly feeling existing between them.

If you are a "secret process" man, attend the various meetings to be held the first part of the year. It will cause you to become an advocate of reciprocity and take down the bars.

The holiday tide is on, and ROCK PRODUCTS wishes its many readers all over the world a merry Christmas. The year has been a good one, and all should be in good cheer. The little "mind panic" we have experienced should insure a happy and prosperous new year, for when a nation cuts out its extravagances it is in a fair way to take advantage of its prosperity.

The information in ROCK PRODUCTS is not taken from other papers, but gathered from all quarters of the globe by competent men. A careful perusal of its columns will demonstrate this.

Cutting the price will never increase the volume of business. Therefore it behooves the cement manufacturer to shut down the mill and wait for a demand when his stockhouse is full.

"The man who knows" is the man who reads ROCK PRODUCTS. If you have a think coming, put it on paper. It may bring out a thought from some competitor. ROCK PRODUCTS, the clearinghouse of the building material industry, will distribute it to others, that broad gauged methods of conducting business may prevail in all branches of our industry.

One good thing is clearly to be seen as we approach the joyful Christmas tide, and that is that the worst of the recent business depression is over as far as the Mississippi Basin is concerned. The return to confidence comes from the people with the resources of the country in their hands. All of the small towns have completely recovered their equilibrium, and the improved conditions are being forced upon the realization of the big interests in the cities. The Chicago Cement Show afforded a splendid example of this, for there never was upon any past occasion so much confident purchasing of machinery to consume building materials. In fact, every exhibitor who had something to sell reports that there is plenty of business doing and in sight. It has been a surprise to even the most sanguine, and shows that the people, the real basis of prosperity, are not worrying. Good things are coming on fast and strong. Get into the band wagon with ROCK PRODUCTS.

Shows and Expositions.

The success attending the Cement Show, which has just closed, furnishes an incentive for the stockholders and directors of the Cement Exposition Company to get busy for next year. In this connection it might be agreed between the exhibitors and entire trade that two cement expositions are enough in one year. If one were conducted in Chicago and one in New York, it would give an opportunity for all consumers, as well as the trade, to see the latest devices in mechanical lines, as well as to furnish new ideas in cement construction, without bleeding the cement manufacturer and dealer for numerous expositions each year.

It would be better still if we could have two building material shows, although from the showing made at the Cement Exposition it occurs to us that it would be impossible to take care of either the crowds or exhibits; therefore, an exposition of building materials in future years at the National Builders' Supply Association meeting, to be held in Chicago, February 4 and 5, 1908, would serve the purpose and assist all concerned.

This pernicious habit of too many conventions is due to commercialism entirely, and the habit of holding an exposition every thirty minutes and getting up some kind of a program to milk the building material trade must be stopped. It may have seemed right during the "boom" times we have had during the past two or three years, but with reduced business the people cannot stand it. It is just as well to face the matter and systematically do the exposition act, which will mean good results and not so much of a repetition of making exhibits and paying out money.

If the people in the trade have money to give away, why don't they spend it with the trade papers who are hammering for every branch of the business every day in the year, instead of turning it over to a few people who drop into the game for a few weeks as a matter of livelihood, without having any personal interest in the success of the industry.

Editorial Chat

Building Outlook at the Metropolis.

There is considerable speculation in New York at the present time as to just what large building operations there will be to take the place of those rapidly nearing completion. At the present time the horizon seems to be very clear, but the general sentiment is that after the first of the year building operations will again assume normal proportions. This, however, is extremely problematical, and New York will, in all probability, face a situation soon which will be unprecedented. The new building code will revolutionize building operations, and architects and builders have had to change their plans. A protest has gone up from the concrete men, and the outcome of the whole situation is still in doubt. There are four immense buildings now nearing completion in New York which are unique in one respect or another, and it is doubtful if there will be any to take their places when they are finished. Of course, there are innumerable small jobs always going up, and they are not so small either, as a New York building that excites no comment would be sufficient to attract a great deal of attention in the average-sized city. The four buildings referred to are the Metropolitan Life Tower, the Church Street Terminals, the Singer Tower and the City Investing Building. Of these the Singer Building will, in all probability, be finished first and will enjoy the distinction of being the tallest building for a while at least. The Church Street Terminals will have the largest floor area ever found in an office building, while the City Investing Building will be the tallest to carry the largest proportion of its area to its maximum height. The Singer Building will be forty-one stories in height, with a four-tier lantern which will rise to a total height of 614 feet above the sidewalk. The Metropolitan Life Building will be 46 feet higher, and when completed will be the highest piece of construction on this continent, and only second to the Eiffel Tower in Paris.

W. M. Hunter, sales manager of the Edison Portland Cement Company of Pittsburg, called on ROCK PRODUCTS recently and stated that their company had added a new stockhouse, with a capacity of 500,000 barrels. This makes it possible for them to manufacture 10,000 barrels daily. They have put in a new railroad switch, connecting their quarries with the D. & L. W. Railway.

Southern California will have one of the most complete Portland cement plants in this country in the mill which is now under construction at Riverside, Cal., for the Southern California Portland Cement Company. Ground was broken for this plant on January 1, 1907. The foundations are practically all in place, and work has progressed steadily with the exception of a few slight delays due to the non-arrival of some of the machinery. The grinding equipment consists of the celebrated ball mills from the Krupp Company in Germany. Mr. W. G. Henshaw, Oakland, Cal., is president, and Mr. W. W. Pool is manager of the company.

Peter Martin, president of the Ohio and Western Lime Company, Huntington, Ind., is a banker as well as a lime manufacturer. He is largely interested in one of the banks at Huntington, of which his son Ed is cashier. "His policy during the recent money troubles was a very good stunt," said one of his neighbors in talking the other day. "His bank is one of the strongest in Northern Indiana, and during the stringency they paid in currency and advertised the fact. The depositors could get their money when they wanted it, which resulted in increasing their deposits." Mr. Martin reports that their volume of business for 1907 has been good, and he is particularly gratified by their increase in sales of hydrated lime. They manufacture this not only at Huntington, Ind., and Gibsonburg, O., but their operations at Marion, O., have also been active. Assistant General Manager Thurston, who makes Toledo his home, reports a busy year and looks forward to increased activities during 1908. He recently spent a few days in Pittsburg visiting various customers and finding out their requirements for the coming year.

PLANT OF SCIENTIFIC MIXED MORTAR COMPANY, LOS ANGELES, CAL.

Charles O'Donnell, general manager of the Buckeye Portland Cement Company, Bellefontaine, Ohio, and E. S. Cooney of the Moores-Cooney Company, Cincinnati, blew into the ROCK PRODUCTS sanctum and complained about the dark days in Chicago, as compared with Cincinnati, incidentally announcing that they came to see the First Cement Show because they believe it is being conducted for the benefit of the industry. Mr. O'Donnell is one of the aggressive Western manufacturers of cement and recently enlarged and reëquipped his splendid plant at Bellefontaine. Mr. Cooney is one of the largest operators in building materials in Cincinnati, and reports having had a good season.

W. E. Sherer, Eastern sales manager for the United States Gypsum Company, was in New York for several days last week to look over the Eastern situation.

One of the biggest jobs of plastering ever let in the world went to McNulty Brothers, New York, who have secured the contract for the Hudson Terminal Buildings. There will be nearly a half million yards of plastering in this building. Ivory cement plaster will be used. Clinton & Russell are the architects.

The Henry S. Spackman Engineering Company, 42 North Sixteenth Street, are too busy these days to bother over conditions. E. W. Lazell, vice-president of the company, treated the ROCK PRODUCTS man to an agreeable surprise when he showed him through the plant. They occupy a four-story building at this address, and as there is but little outward index to what is going on within, one's eyes open wide on visiting the various floors and the double basement. There are testing machines for every known material used in building; iron and steel testing machinery in cellar; sand-lime and cement brick making and testing plant; laboratory where cement is tested; large draughting rooms, with the most convenient arrangements for electric lights, and a large dynamo in sub-cellar for power, comprising altogether one of the most complete industrial testing laboratories in the country. The company's work calls them to all parts of the Union and to Mexico. They are now designing and superintending the erection of a 5,000-barrel cement plant in San Juan, San Benito County, Cal., for the San Juan Portland Cement Company. In the composition used for the building of this plant there will be considerable reinforced concrete. The San Juan company is building its own railroad, will control its own oil works and will be the most up-to-date plant on the Coast. The total cost will aggregate $1,500,000.

Ed Cox, the owl man of Chicago, charms you when you pay him a visit. It is an identification charm and it has real virtues, for it identifies a man who is lost.

E. R. Stapleton of the Iola Portland Cement Company, St. Louis, just dropped in. He believes in cement, talks cement, and you would take him for a Methodist preacher if you could hear him explain to a contractor, architect or building material man the wonderful things that can be accomplished with Portland cement, especially the Iola kind.

A notable feature of the Atlas Portland Cement Company's display a large photograph in several sections of their plants 2, 3 and 4 at Northampton, Pa. The complete picture is about ten feet long. Evans and Clayton superintended the installation of the Atlas exhibit. They are hustlers. It was worth something to see the loving care with which they removed Sappho from the sarcophagus. There wasn't a scratch on the lady when she came out of her wraps, and Clayton says there is no gooseflesh, either.

New Incorporations.

Progress Brick Company, Schenectady, N. Y., to manufacture and deal in brick, stone and building material; capital, $35,000. Incorporators: F. W. B. Scharadt, P. Schmidt, J. Gritzbach, Schenectady.

The Burlingame Building Supply Company of Burlingame, W. Va., was incorporated with $10,000 capital stock by C. E., L. V. and T. W. Burlingame, J. A. Bandi and C. M. Monroe.

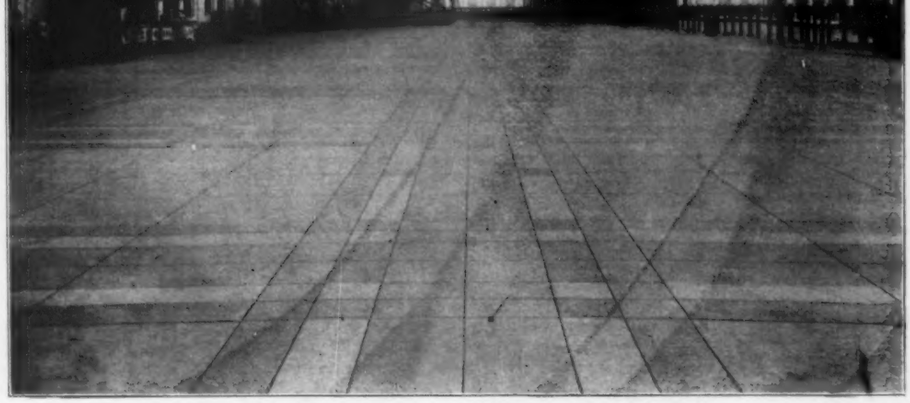
The Carolina Building Company of Columbia, S. C., has been incorporated with a $20,000 capital stock by L. T. Wilds, T. C. Williams and others.

The Crane-Veeder Company, Schenectady, N. Y.; to deal in lime, cement, etc.; capital, $50,000. Incorporators: William S. Veeder, Thomas R. Crane, Ida M. Veeder, Anna M. Crane, Schenectady, N. Y.

The American Sanitary Floor Company of Chicago; capital, $12,000; manufacturing and dealing in building material. Incorporators: Arthur A. Clement, D. J. Calkins, W. A. Collins.

The Samuel W. Rothrock Company, New York; to manufacture building material; capital, $10,000. Incorporators: Samuel W. Rothrock, Isabel C. Rothrock, T. Stanley Doran, New York.

The C. F. Maurice Company, New York; to deal in stone and building material; capital, $50,000. Incorporators: G. F. Maurice, H. G. Bryant, C. Bates Dana, New York City.



THE NEW TERMINAL STATION AT WASHINGTON, D. C.
Vulcanite Portland Cement was used throughout in the pavement, which is in two colors, white and red. R. S. Blome Company, Contractors.

History of a Successful Invention.

A story of success is always interesting, and to the manufacturer, whom it benefits so greatly, the history of the new method of packing known as the "Bates System" is especially so. On this page we present the picture of Mr. Adelmer M. Bates, the inventor of the valve bag and designer and developer of all the various machines which have been created to fill this bag with the manifold commodities that go into bags.

Mr. Bates was a salt salesman in 1898—a successful salesman, having charge of the Western sales department of the Worcester Salt Company as Western manager. He had often visited salt plants and had been forcibly impressed with the crude methods employed in their packing-rooms—a host of girls, often begrimed with dirt, scoop and needle in hand, filling and sewing laboriously the little packages so familiar to the housewife, the perspiration often falling in beads into their work under the dusty, sultry conditions surrounding them.

All this is now over in salt plants, due to Mr. Bates' thinking and efforts. Every up-to-date salt plant, including the International Salt Company, commonly known as the Salt Trust, now uses the "Bates System" in its packing-rooms.

One night early in 1898 Mr. Bates went to his bed, but not to sleep. His mind was too busy upon the problem of how to fill a bag. Long hours he rolled restlessly, puzzling over the knotty question. Most inventors would have expended their thought upon some intricate and impossible mechanism to fill and close the bag by machinery along the lines of imitation of the hand process; but Mr. Bates' mind was of an unusual type, and his genius has always lain not in imitation, but in origination. He was positive the improvement must be sought in the bag itself. Suddenly in the early morning hours there was conjured up before his vision, clear, luminous and well defined, a self-closing flap of cloth—a valve, a cloth valve, a back-pressure cloth valve, a valve in a bag.

No one had thought of it before. Back-pressure valves were common. Every water, steam or sewer pipe knew them, but no inventive mind had yet applied them to bags. Why should they not be? Conviction followed instantaneously. Mr. Bates leaped from his couch, tore the tail from his white shirt, and with his wife's mending needle then and there produced in the corner of a crude bag the simple turn-over flap which, the bag reversed, constitutes the valve today.

In the silent hours of that night of 1898 was produced exactly the same form of valve which is now used in five millions of bags every month—unchanged in form, perfect and effective.

Over 200,000,000 of these bags have been used since that day, and each month the number is leaping upward. The bosom, the collar-band and the sleeves of that old 1898 shirt have disappeared, but Mr. Bates still treasures the tail in the form of his first valve bag, a sacred memento.

The bag was there, its valve was clear, but Mr. Bates little thought then of the time, thought, money and perseverance that would be necessary before the machinery could be designed and perfected to vitalize this bag and adapt it to the various commodities.

Many are the instances of inventors spending years upon the perfecting of a single machine, but before Mr. Bates was the task of developing a whole system of packing, which must include machines that must weigh material and do it accurately; must force it through a small valve, must pack it sufficiently hard in the package to make a full, plump bag, and this without injuring the material of the bag, and do the work so rapidly as to outdistance, outfinance in saving any other method of packing. All this must be accomplished with many different commodities. Experience developed the fact that almost every commodity required a different manner of feed and a different type of scale. How Mr. Bates succeeded is testified to by the number of successes he has scored and the quantity of material that is today actually going into valve bags.

Salt was the first attempt. Twenty different machines were built experimentally before the perfected machine now used in salt plants was secured. With it a rapid operator can put out 12,000 five-pound bags of salt in one day—60,000 pounds, 30 tons of salt, put up into 12,000 perfect packages, ready to be put into barrels by one girl.

A small bag rice machine was then perfected, and then a bean machine, and then Mr. Bates turned his attention to the cruder and cheaper commodities that go into larger bags—cement, lime and plaster.

The result of his efforts along these lines has been a truly wonderful machine, a machine that in its operation takes the place of the three operations of

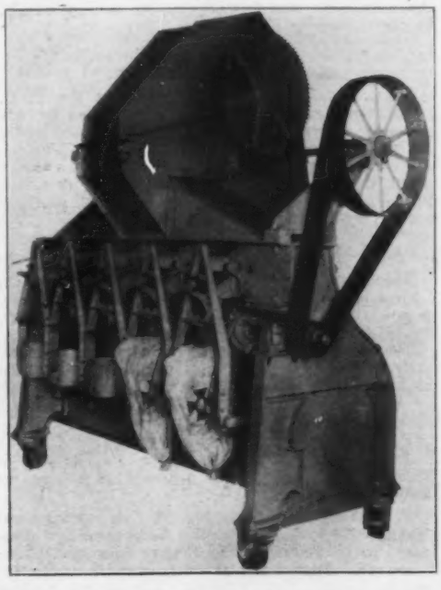
A. M. BATES.
Inventor of the Bates Valve Bag.

filling, weighing and tying the bag, and yet does the work so rapidly and so perfectly as to effect a large saving to the manufacturer.

What enables Mr. Bates to effect this saving is not alone the self-closing feature of his bag, which makes possible the filling of a number of bags simultaneously, but also the fact that the machine does most of the lifting of the weight of the bags when filled and during the process of filling. Another and equally important reason is that all tying of filled bags is eliminated. The operator can handle the machine and bags equally well with gloves on, and thus protect himself from sore or frosty fingers.

The machine will pick up the cement from a bin of stock, or it will receive it from an overhead spouting, as desired by the manufacturer. It fills both cloth and paper valve bags, and a particularly valuable feature of the system is the quality of this paper bag. Both ends are square; it is not tied; therefore flexible paper is not necessary in its manufacture.

To make paper flexible a washing process is resorted to which washes out the strength, at the same time that it removes the stiffness. A stiff bag is better than a flexible bag, the need of tying being absent. The valve paper bag does not need to be tied. The large cost in the open-mouth tied bag, to secure both flexibility for tying and strength for holding the weight of goods, is used in this bag in securing stiffness and extra weight of paper for the one purpose of securing strength. Manufacturers who use the paper valve bag are strong in its praise and declare that it eliminates a large percentage of breakage in transit and the consequent



THE BATES BAGGER.

trouble arising therefrom with customers. Repeatedly is heard among lime and cement manufacturers the expression, "We could not get along without it." A large cement manufacturer in the East has said: "It is the ideal system for cement, and in the future all cement will go into valve bags."

The reward of the full fruition of his labors that he is realizing today is due Mr. Bates for the fertility of resource, earnestness of purpose and untiring perseverance he has shown in the development of his system. He has quadrupled the results and lightened the burden of labor. He has simplified that problem for the manufacturer of lime, plaster, cement and other commodities. "He has made two blades of grass grow where but one grew before."

Fireproofing and Structural Tile.

In the whole range of concrete development there is perhaps no one material that has been needed so much as a structural tile that is really fireproof and at the same time possessed of the compressive strength to meet modern structural requirements for sky-scrapers in the big cities and the larger class of buildings generally. The most eminent architects and engineers of the world have been looking to the concrete industry for some time for a development in this line which would cover all the necessary points. The expected improvement has come, in the shape of an invention by Albert A. Pauly, of Youngstown, Ohio, who exhibited at the recent Chicago Cement Show a large collection of concrete tile made of poured material and cured by a special process by the use of steam. The aggregates used are trap rock screenings or granulated furnace slag for the high-grade product, while limestone screenings, graded gravel or clean cinders can be used for a lower grade. The perfection of this radical invention and its development are already familiar to regular readers of ROCK PRODUCTS, which has been in touch with this leading improvement from the beginning of its development.

Mr. Pauly has invented a set of machines for making these concrete tiles upon a very economical factory basis where the right kind of materials are to be had in sufficient quantity. Every step in the progress to completion has been taken with the guidance of careful and exhaustive tests for compression and for fireproofing qualifications, so that the exhibit at Chicago introduces the new material as a complete and perfect innovation, the one grand achievement of the concrete industry of the year 1907.

It was received in this way by contractors, dealers in builders' supplies, engineers and architects—the class of people who know the proper thing when they see it—and now all that remains is to attend to producing an adequate supply of the tile in all the various sizes and shapes to take care of the demand already established with a far inferior material made of clay, which is very hard to get in sufficient supply, even at very high prices.

A new use for Portland cement is provided by Mr. Pauly's invention, one that bids fair to consume in the near future a larger quantity of cement than any other one branch of the industry, for the far-reaching importance of the lines of activity opened up to the concrete manufacturer can but be expressed by citing the revolution it is bound to bring about in building materials, for fireproofing tile and structural tile of all kinds are only two of the important features. Flue linings, round and square conduits in any number of divisions, sewer pipe in both small and large sizes—larger sizes being made cheaper in proportion than smaller sizes—partition blocks, and veneering blocks for the outside of buildings where light curtain walls of great strength are desirable.

The inventor announces a great exhibit for the Buffalo convention in January and invites the critical inspection of every one interested in the production of perfect materials for all kinds of construction.

New Mixing Machine.

The new turbine mixer of the Chicago Concrete Machinery Company that attracted so much attention at the Coliseum show will be exhibited at Buffalo in January, also at the Lincoln, Neb., exhibition in February. The importance of this new type of mixer is the turbine feeder, a device which receives the mix within a few inches of the ground and elevates it to the perpendicular point, where it is dropped onto the large revolving drum and thoroughly mixed, and passes out through the discharge end by another device. The new turbine attachment entirely does away with all hoisting drums, clutches, brakes and other apparatus; also the high platform commonly in use. The machine is equipped with an automatic water tank that regulates the moisture for the mix. It is built with either gasoline or steam power.

Quarries.

Seasonable Talk.

If the producer of crushed stone ever takes a rest and the rattle and bump of the separating screen is to be hushed for a time, it is sure to begin during the holiday season, when everybody tries to take things easy.

Old 1907 has been a good year for the stone producers. There has been some talk by the big things in railroad circles about curtailment of new construction and smaller appropriations in the maintenance of the roadbed. Most of this has been hollow chatter, such as the daily papers print for the purpose of boosting somebody's stock-jobbing game, or something else far away from the crusher. The man who runs the quarry can wink the other eye in the face of such reports, for the only trouble is to get the stone out fast enough and pass the vouchers on for collection. As long as the railroads keep on increasing the speed of the trains and the weight of the freight engines to draw longer trains, which is the real observed leading feature of all the lines, there will be increased orders for ballast. The more criticism of the management of the roads comes from the public the more strenuous efforts will they put forth to show that they are not falling behind the march of progress, and the result of such agitation means more ballast. Nobody in the business thinks there will be less ballast used than the season just passed. The steel mills will want just as much fluxing stone, and the concrete industry will call for double the amount that they have ever consumed.

It is up to the crusher man now to consider improvements and new equipment. The whole plant should be systematically gone over and critically viewed with the idea of getting the greatest efficiency for the least money, for, sad to say, in the midst of all the prosperity in the volume of business and its marked tendency to expansion there is little inclination to raise the price of the delivered product. Then it is simply a matter of the most economical equipment to get the most profit out of the business.

Go over the elevators, consider the size and position of the crusher, figure out the efficiency of the screen. Look into the matter of increased capacity attendant upon putting in a steam shovel in case you find that your crusher could handle more stone if you could only get it up to the feeding platform.

If your operations are choked up at the delivery end, look into the possibilities of storage, in connection with a locomotive crane. These things all mean something to the live producer of crushed stone, for the difference between a profitable and unprofitable business is defined by the one condition of the economies to be found in the equipment. Turn over the advertising pages of this issue, and you are sure to find the very latest suggestions from the builders of equipment of all kinds for the use of crusher plants. No up-to-dater can afford to overlook them.

In Southeastern California.

LOS ANGELES, CAL., Dec. 1.—A ROCK PRODUCTS traveler is now doing the Pacific territory. He is visiting the stone interests and getting a view of the business from that standpoint.

Naturally where an industry receives supplies by railroad, its plant should be situated where a switch track could be laid to it. This the ROCK PRODUCTS man found to be the case with the Western Crushed Rock, Sand and Gravel Company, whose works are near the Santa Fe Railroad. H. S. Griswold, the manager, who, I learned, was a Louisville man, gave particulars regarding the business of the company. They have a No. 3 Austin crusher, which, he said, was giving excellent satisfaction and doing all, if not more, than they expected, since it is being put to a severe test, because most of the stone being served to it is boulder, or "nigger-head," as it is known locally. The larger stones are broken by men who use heavy sledge hammers, and some of it is flint rock, hard as steel. Rock is a very scarce article locally and what they get is brought in by rail from the river-bed. It was interesting to watch the facility with which the powerful crusher got its grip on the stone which was being constantly fed to it by the men as they dumped in their wheelbarrow loads at the rate of as high as twelve tons an hour. The crushed stone is elevated to a bin of 580 tons' capacity. Mr. Griswold said the salesmen had not claimed the cast-iron concaves would stand over, say, ten days' use, but, though set some weeks ago they are still doing business. He also said they would soon have a set of manganese concaves and would put in a jaw crusher to supplement their capacity. There is a large demand for crushed stone for reinforced concrete buildings and their sales last month amounted to over $3,000.

Power for the crusher is supplied by a 20-horsepower motor, and for the elevator and screen by a 10-horsepower. The possibilities of this climate for building operations are shown in the fact that Mr. Griswold had seen a boy in the neighborhood who said he had never worn shoes.

Orders for Concrete Aggregate.

The Granite Pressed Brick and Crushed Stone Company has offices at 540-541 Bradbury Building and its plant is situated at Sixteenth and Alameda Streets. Talking with Charles King, manager, the ROCK PRODUCTS man learned that at present they are giving attention to operating their crushing works, producing crushed stone for paving, reinforced concrete buildings and artificial stone. Later on they will install White's machine for making pressed brick. The company uses a 50-horsepower gasoline engine for power to operate a No. 5 Gates crusher. Their bin capacity is 1,000 tons. M. L. D. Todd is the secretary of the company.

New Stone-Crushing Plant.

RIVERSIDE, CAL., Dec. 2.—This city is to have a new industry. The C. L. Johnson Company has just been organized and will start a stone-crushing business at Point of Rocks, three miles from Riverside, at the junction of the Santa Fe and Southern Pacific Railroads. This firm will erect a plant of 2,000 tons' capacity and it is expected that it will be running by the first of the year. The total cost of the plant will be $10,000 and the new stone crusher, which is now on the way here, cost $2,000.

New Concern in Virginia.

RICHMOND, VA., Dec. 2.—An incorporated company, which will quarry stone on Devil's Island in the James River, and which is capitalized at $10,000, has just been formed by Messrs. Ware B. Gay of Richmond, L. E. Ullman of Winchester, William G. Killigrew of Columbia, S. C. The quarry will have an output of from 50 to 100 tons a day, and will be in full operation within the next week.

These quarries have been leased from the Mayo Land and Bridge Company, and stone will be transported from them by means of an overhead carrier to a plant on Mayo's Island, where it will be crushed. About fifteen men will be employed here.

At present there is a great demand for crushed stone from various sections, the same being used in all concrete work as well as in macadamizing roads.

Mr. Gay of Richmond is president of the new concern, Mr. Killigrew is manager and Mr. Ullman of Manchester is secretary.

Mr. Killigrew will be placed in entire charge of the work. He was formerly in the employ of the Southern Railway Company.

Quarry Buildings Burn.

LIMA., O., Dec. 6.—The buildings at the T. C. Long stone quarry were entirely consumed by fire yesterday afternoon. The fire started in a shed where oil was kept and destroyed the entire plant. The employees endeavored to save the most valuable things about the office, but were forced to flee from the flames and heat. The loss exceeds $10,000, partially covered by insurance.

New Crusher at Columbus.

The Columbus Limestone Company, Columbus, O., with a capital stock of $125,000, has been incorporated by A. G. Wyatt, Fred W. Flower, H. D. Bruning, John H. Soules and A. L. Ralston.

The company will do a general quarrying business, and owns forty acres of quarry lands north of the city on the Olentangy River, where machinery will be installed and ready for operation within a short time.

Joseph Haverstroh, Lock Haven, Pa., an experienced and successful ballast producer, is looking for a Western location.

J. E. Hughes of Wheeling, W. Va., and several Moundsville (W. Va.) parties have formed a company, to be known as the Empire Lime and Stone Company. The office and works will be in Monongahela County, West Virginia. The capital stock is $500,000.

ROADMAKING IN WISCONSIN.

Exhaustive Wearing and Cementing Tests of Crushed Rock—Concrete Culverts Advocated.

The Wisconsin Geological and Natural History Survey have just issued their bulletin No. 18, which is an interesting volume of 136 pages entitled "Rural Highways of Wisconsin," by William Otis Hotchkiss, instructor in geology at the University of Wisconsin, who is in charge of the economic geology branch of the Survey's work. Speaking under the head of road construction of crushed rock, Prof. Hotchkiss says:

"In the larger part of Wisconsin there is plenty of rock available for crushing. There is limestone in plenty in the eastern and southern parts, granite in the central and northern parts and hardheads over almost the whole State.

"The relative values of different kinds of rock for road metal have been tested in several ways. The two tests of most practical value are the *wearing* test and the *cementation test*. In the wearing test a certain number of pieces of standard size are rotated for a definite time in a steel cylinder and the amount of dust worn off the pieces weighed. In the cementation test the powdered rock is moistened and made into a little cylinder. This cylinder is then broken by the blows of a hammer falling the same distance for each blow, and the cementing power of the rock measured by the number of blows the rock is able to resist without breaking. The resistance to wear offered by many Wisconsin rocks has been tested by the State Geological and Natural History Survey under the supervision of E. R. Buckley. The following table from his report gives the relative wearing qualities of some Wisconsin rocks when used for road metal:

Wearing Tests of Crushed Rock.

Name of sender.	Kind of stone.	Per cent. of wear.	Rank.
Montello Granite Co.	Granite	2.16	3
Wisconsin Granite Co.	Quartzite	3.50	8
F. Powell	Limestone	9.86	16
Horlick's L. & S. Co.	Limestone	7.02	15
G. H. Chaffee, Sparta	Flint	2.10	2
Richwood Crushed Stone Co., Watertown	Limestone	3.90	12
Waupaca Crushed Granite & Stone Co.	Granite	1.80	1
Sheboygan Lime Works	Limestone	6.46	14
M. Maxon, Waukesha	Trap	2.90	6
C. F. Smith, Appleton	Limestone	3.46	9
Menomonee Falls-Lannon Stone Co., Lannon, Wis.	Limestone	4.04	13
Marblehead Lime Co.	Limestone	3.90	11
Sheboygan L. & S. Co.	Fieldstone	3.88	10
Rice Lake	Quartzite	2.36	7
Utley	Rhyolite	3.04	4
Berlin	Rhyolite	2.76	5

"The cementing property is important because it is this which causes a road made of crushed rock to become hard and smooth upon being traveled. The cementing property is due to the ability of the fine dust, into which rock is worn by the wheels, to set like cement into a more or less solid mass upon being moistened and packed. As this fine dust is continually being washed off the road by the rain and blown away by the wind it must be replaced by the new dust worn off the stones by the wheels. If a very hard surface material, such as trap rock or granite, is put on a road which is comparatively little traveled, the result is that there is not enough dust formed to replace that blown and washed away, and the surface 'ravels' and becomes a mass of loose stones. On the other hand if a soft stone, such as some limestones, is used for the surface of a heavily traveled road, more dust is formed than is carried away, so that it forms a layer over the surface and makes disagreeable dust or mud, according as the weather is dry or damp. The kind of rock used on the surface of a road must accordingly be determined to a considerable extent by the amount of travel.

Cementing Tests of Crushed Rock.

"The cementing tests on the powder of different Wisconsin rocks have not been very satisfactory, as they do not agree among themselves. A table of their relative merits is therefore not given. In general it may be said that limestone, flint and dark igneous rocks have good cementing qualities, while quartzite and light-colored igneous rocks, such as granites, have poorer cementing qualities. These last two are very hard and may do well as surface material where travel is heavy. Many granites, however, have fairly high cementing qualities.

"The proper size of crushed stone to use for a macadam surface depends partly upon the strength of the rock used. Each stone in the surface should be strong enough to support, without breaking, the weight which the wheel of a loaded wagon will put upon it. If the stones are too small to do this they will grind up rapidly under the traffic. If a relatively weak stone such as a soft limestone is used, the ones at the top. If a hard stone is used, the larger

ones should be at the bottom and the smaller at the top, as the smaller stones make a more even surface and should be used there when they are strong enough to bear the weight put upon them.

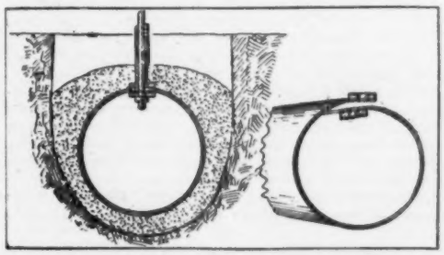
"The usual sizes to which crushed stone is separated are 2½ inch, 1 inch, and ½ inch, or screenings. If soft limestone is used the 1-inch pieces should go on the bottom and the 2½-inch pieces should be used for the surface; if hard rock, either granite or trap or hard limestone is used, the 1-inch pieces should go on the top. In both cases the screenings are spread over the top in a thin layer to fill the spaces between the larger stones."

Cheapest and Most Satisfactory Culverts.

Prof. Hotchkiss is a strong believer in concrete culverts, and speaking on this subject he says:

"Concrete culverts are probably the best and most permanent that can be constructed. If properly made they are better the older they get.

"It has been found that by imbedding steel reinforcing bars in the lower part of a flat sheet or



OVERTURF STEEL MOLD FOR CONCRETE CULVERTS.

beam of concrete where cracks first develop in breaking, such beams can be made much stronger. This principle is used very extensively and large structures are made of this 'reinforced concrete.'

"In building culverts or bridges of concrete they can either be built with arched tops without reinforcing or with flat tops using reinforced bars. In smaller types of culverts it is cheapest and most satisfactory to make them of the arched type, as this does away with the extra expense of putting in the reinforcing bars. The small extra amount of concrete which is necessary is not sufficiently great to offset the extra labor and cost of putting in reinforcing bars. For the larger types—those with an opening of over two feet—it is often more economical to use the flat-topped forms and the reinforced construction. The plate herewith shows one of the standard forms of flat-topped reinforced concrete culverts prepared by the Iowa Highway Commission. They have made standard plans for the various sizes of these culverts up to 24-foot span, which show, as in this particular plate, the amount of reinforcement required and just where it is placed. The College of Engineering of the State University plans to make standard designs for such culverts and bridges for use in this State. For the small arched-top culverts forms may be made quite cheaply. The best form for small culverts which I have seen is one which was exhibited at the road school held at Ames by the Iowa State Highway Commission. The makers of this mold, C. W. Overturf & Co. of Dumont, Iowa, have kindly furnished the accompanying cut. The mold is composed of a sheet of heavy galvanized steel bent into cylindrical shape and held together along the edges by bolts which are removed after the concrete has set, the steel being then rolled into a more compact form to separate it from the walls so that it can be easily pulled out. This makes practically a concrete pipe culvert in a single piece."

Good Roads in America.

America always realized the importance of good roads, but it is only within the past few years that practical work has been done to secure them. The advent of the road machine in the early '80's began the era of better roads, but in some sections this machine made roads even worse than they were before. It was thought nothing more was necessary than smoothing the surface, lowering the edges of the road and working the dirt up into the middle. This looked all right and was good enough for a short time, but the absence of "bottom" caused the road to wear out rapidly and get into worse condition than before it was "worked." In the early '90's the good roads movement began taking definite shape in many sections which discarded the time-honored system of "working out" road tax for the cash method and an improvement was immediately noted. Then came the advent of the stone crusher and the agitation for good roads, which has reached every part of the country. While plenty of frightful roads may now be found everywhere, state and government supervision has wrought wonderful changes. Every year several hundred miles of macadam road are built and the celebration of the fiftieth anniversary of *Grit* ought to see America as famous for its good roads as France is now.

The United States Bureau of Agriculture is setting the pace in the construction of sample stretches of road in various parts of the country, and this is having a splendid effect.—*Philadelphia Ledger.*

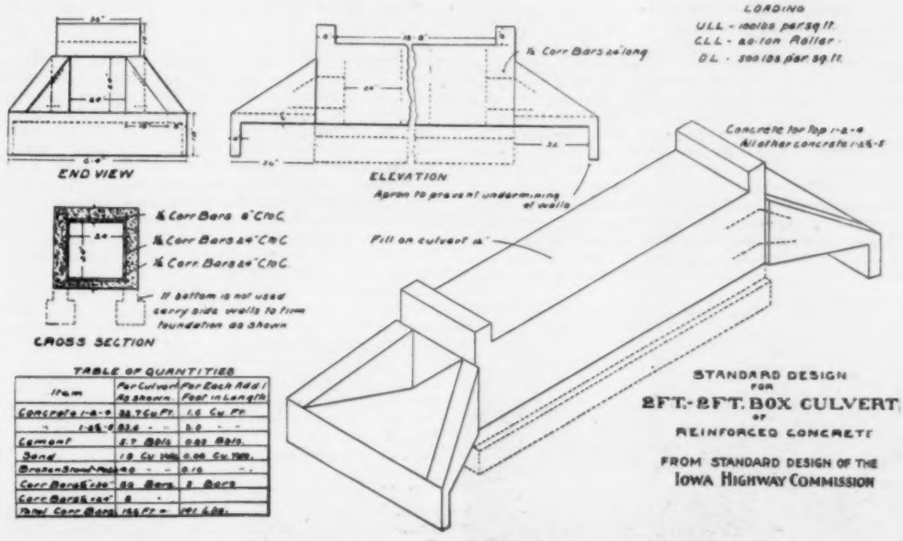
To Produce Ballast and Road Material.

LEBANON, PA., Dec. 10.—The charter of the Bassler Limestone Company, which has a new quarry operation in charge at West Myerstown, was filed for record yesterday.

The stockholders are C. B. Funck, I. L. Beckley and H. T. Atkins, each holding 100 shares. The capital stock is $50,000. C. Bertram Funck is the quarry superintendent.

Will Taylor of the Casparis Stone Company, Columbus, O., was an Eastern visitor recently. He stated they would make some little improvement in the various plants, but only such changes as are necessary. He reports 1907 business in crushed stone has been fairly active.

The crushing plant of Lukens & Yerkes at Rushland, near Doylestown, Pa., was destroyed by fire November 26. Loss about $20,000. The plant is totally destroyed.



STANDARD BOX CULVERT DESIGN OF THE IOWA HIGHWAY COMMISSION.

Lime

The National Lime Manufacturers' Association

Meets Semi-Annually.

Peter Martin, Huntington, Ind. ..... President
A. A. Stevens, Tyrone, Pa. ..... First Vice-President
W. B. Carson, Riverton, Va. ..... Second Vice-President
T. H. Fleischer, Sheboygan, Wis. ..... Third Vice-President
C. W. S. Cobb, St. Louis, Mo. ..... Treasurer
A. J. Whiteford, Toledo, Ohio ..... Secretary

Official Organ, ROCK PRODUCTS

The annual meeting of the National Lime Manufacturers' Association will be held in Chicago, February 6 and 7. Headquarters, Auditorium Hotel. Every lime manufacturer is invited.

National Lime Manufacturers' Association.

The National Lime Manufacturers' Association will hold their annual meeting at the Auditorium Hotel, Chicago, February 6 and 7. The members of this association will hold their conclave to review the business of 1907 and plan for more intelligent manufacture and coöperation for 1908. The educational feature of this association has always been a grand one, inasmuch as the livest men in the industry from Maine to California have attended the meetings. Even if there were no program and they simply met and talked matters over, no lime man could afford to miss it. The influence of this association has been felt in every hamlet where lime is used. It has been reported at two or three meetings that men who would have absolutely nothing to do with their competitors attended meetings and worked out their problems. They believe in each other now and have reason to, as they have profited by this whole-hearted coöperation which has become a part of the Lime Association.

The work of Secretary Whitford, who has traveled from Maine to the Pacific Coast, has gained for the association a fund of information which should be beneficial not only to the eighty members at this time, but eighty other lime manufacturers who should be in the fold. His report will no doubt be the most interesting of the occasion, and the data compiled will furnish every lime manufacturer with information about his own business.

Charles Warner, secretary of the executive committee, in connection with President Peter Martin and other active members, is preparing the program. After the reports of the officers there will be a talk on "The Loss of Plasticity in High Calcium Hydrates" by H. E. Bachtenkircher by Chicago. T. E. Fleischer of Sheboygan, Wis., will tell of his experience in the application of the Combustion Utilities Company's system of burning lime in the operation of limekilns at Sheboygan, Wis.

Frank Hunkins of St. Louis will tell his experience in the construction of a modern, up-to-date lime plant. Mr. Jones of the New York Lime Company, Carthage, N. Y., is to have a paper on the rotary kiln for lime-burning. H. O. Duer will talk on making lime for the use of the sand-lime brick manufacturer and other specializing. There will also be a talk on the crushed stone plant as being subsidiary to lime and lime-burning, or vice versa.

A social session will be held Thursday evening, February 6, and either an informal dinner or smoker will be given.

Clifford Owen of John D. Owen & Son, Owen, O., reports that they had a very active year and are well pleased with the outlook for 1908.

Jake Urschel of the Woodville White Lime Company, Toledo, O., accompanied by his brother John, was in Pittsburg the other day in conference with J. J. McCracken and other of their eastern sales representatives.

A. H. Lauman, president of the National Mortar and Supply Company, Pittsburg, reports that they are making quite a little progress with their new mill at Gibsonburg, O., which they expect to be operating about the 1st of February. This will be one of the modern lime plants for both lump and hydrated lime.

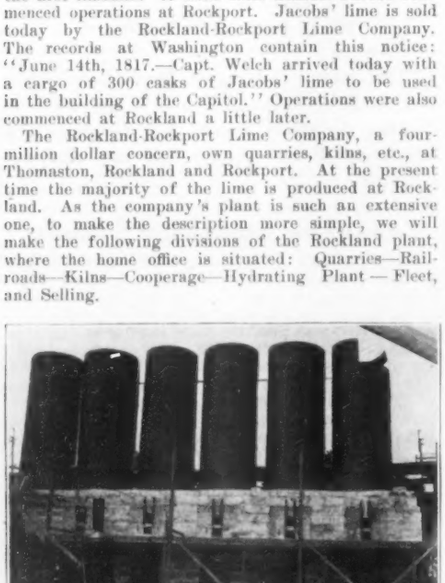
ROCKLAND-ROCKPORT LIME COMPANY.

The Oldest Lime-Producing Organization in America.

Situated at the mouth of the Penobscot River, in the State of Maine, are the cities of Rockland and Rockport, the largest in Knox County, of which Rockland is the county seat. These cities for over a century have been well known in the coasting trade, but their great reputation has been won on the quality of the building lime they produce. Rockland-Rockport lime today in the building trade is considered the standard.

The vein of lime rock in Knox County commences at Thomaston and extends through Rockland and Rockport, a distance of twelve miles. It was at Thomaston over a century ago—in 1795—that General Knox, Secretary of War under Washington, built the first limekiln. A little later Samuel Jacobs commenced operations at Rockport. Jacobs' lime is sold today by the Rockland-Rockport Lime Company. The records at Washington contain this notice: "June 14th, 1817.—Capt. Welch arrived today with a cargo of 300 casks of Jacobs' lime to be used in the building of the Capitol." Operations were also commenced at Rockland a little later.

The Rockland-Rockport Lime Company, a four-million dollar concern, own quarries, kilns, etc., at Thomaston, Rockland and Rockport. At the present time the majority of the lime is produced at Rockland. As the company's plant is such an extensive one, to make the description more simple, we will make the following divisions of the Rockland plant, where the home office is situated: Quarries—Railroads—Kilns—Cooperage—Hydrating Plant—Fleet, and Selling.



SOME OF THE MODERN KILNS OF THE ROCKLAND-ROCKPORT LIME COMPANY, ROCKLAND, ME.

The quarries are about 150 feet deep, 200 feet wide and 500 to 600 feet long. The rock is broken up by steam drilling and blasting, the Ingersoll-Rand steam drills being used. The quarries are also equipped with the Knowles & Dean pumps. The broken stone is carried from the bottom of the quarries by a Lidgerwood hoist and 6 to 8-ton derricks at the top, where it is swung to the side and dumped into cars ready to be hauled to the kiln.

There is a haul of two miles from the quarries to the kilns, which are situated on the water front. This haul is an important economical factor in the manufacturing of the lime. But the problem is solved by the Lime Rock Railroad Company, which is owned by the Rockland-Rockport Lime Company, and consists of twenty miles of track, 450 cars, 4 locomotives, a roundhouse and a repair shop, where not only all repairs are made but new cars built.

After the rock is dumped into the cars at the quarries the cars are hauled in trainloads of thirty to the kilns, where they run upon a trestle which is even with the top of the kiln, and a carload at a time is dumped into the top.

They have eighty kilns, with a capacity of 10,000 casks per day. The kilns are modern in construction, measuring 5 feet by 7 feet, inside diameter, 40 to 50 feet high, and holding about 500 casks. Coal and wood are used principally for fuel, but a few kilns are equipped with gas-producers. The burnt rock is carefully picked over and packed into casks by weight, there being a scale in front of each kiln. In connection with the packing it may be added that the company guarantees the weight of every cask. Their trade-mark is stenciled on the head and staves. The last few years some unprincipled lime companies have tried to take advantage of the reputation of the Rockland-Rockport lime in New York City and have bought up the company's barrels after the lime was used, refilled them with lime of a poorer grade and sold them to the trade as Rockland-Rockport lime. The Rockland-Rockport Lime Company secured an injunction against one company, and as a protection every barrel of genuine Rockland-Rockport lime contains the company's circular. The lime is packed in the following sizes: Common, 220 and 320 pounds per barrel, blue label. Finishing, 200 and 350 pounds per barrel, red label.

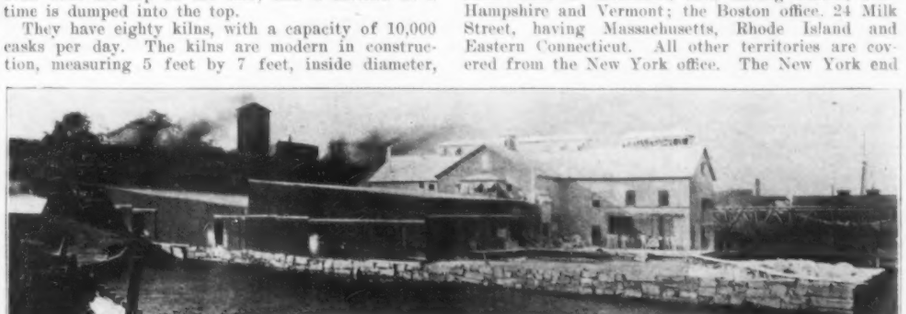
When it is taken into consideration that the weight of every barrel is guaranteed it is easily seen what advantage this is to the consumer. He knows just what he is buying.

The raw material for the cooperage is obtained from the wood lots that the company own. Sawmills are erected, and the lumber thus obtained is shipped to Rockland, where heads, staves, etc., are made by machinery. Some of the barrels are made by machinery and others by hand. At one time this fall they had over 14,000,000 staves and heads seasoning for future business.

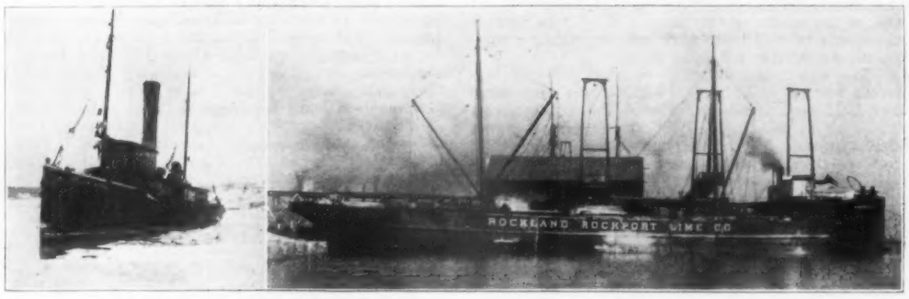
From the kilns the casks are loaded on to flat trolley cars and taken to the wharf and loaded into the barges and sailing vessels ready for shipment to the market. The fleet consists of seven barges, a 1,000-horsepower ocean-going tug and a fleet of sailing vessels. The barges are worthy of mention, being of steel, 200 feet long, 20 feet wide, with a depth of 14 feet, and a capacity of 16,000 barrels. This fleet is capable of landing 250,000 barrels of lime in New York City a month.

The hydrated lime is manufactured in a modern plant, where the lime is taken from the heart of the kiln by belt conveyors through the different operations to a large storage plant, from which automatically paper and jute bags and barrels are filled. Its capacity is 100 tons per day. The product is sold under the name of "Pine Cone Hydrated Lime." It is especially adapted and is being used quite extensively for waterproofing all kinds of concrete work. A notable case where Pine Cone hydrated lime was used successfully was the concrete reservoir at Waltham, Mass. This reservoir has a capacity of 2,000,000 gallons, is 100 feet in diameter, 43 feet high, 18 feet at the base and 12 feet at the top of the shell. Pine Cone hydrated lime was added to the mixture on a basis of 10 per cent to the cement by weight.

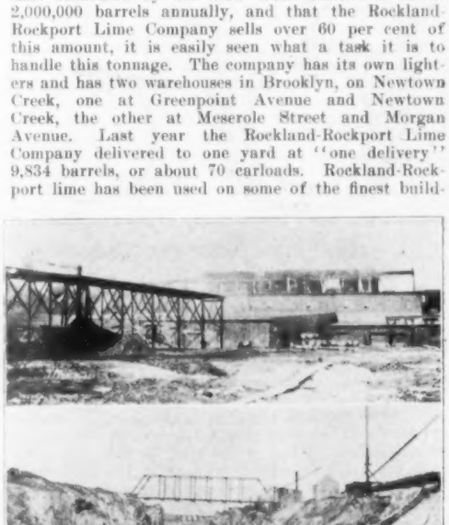
The selling department is in three divisions, the home office at Rockland, Me., having Maine, New Hampshire and Vermont; the Boston office, 24 Milk Street, having Massachusetts, Rhode Island and Eastern Connecticut. All other territories are covered from the New York office. The New York end of the business is very extensive. Last year it handled 1,200,000 barrels. Deliveries are made from the barges, sailing vessels and lighters to the material yards. When one stops to think that the amount of lime consumed by the New York market is about 2,000,000 barrels annually, and that the Rockland-Rockport Lime Company sells over 60 per cent of this amount, it is easily seen what a task it is to handle this tonnage. The company has its own lighters and has two warehouses in Brooklyn, on Newtown Creek, one at Greenpoint Avenue and Newtown Creek, the other at Meserole Street and Morgan Avenue. Last year the Rockland-Rockport Lime Company delivered to one yard at "one delivery" 9,834 barrels, or about 70 carloads. Rockland-Rockport lime has been used on some of the finest build-



HYDRATING PLANT OF THE ROCKLAND-ROCKPORT LIME COMPANY, ROCKLAND, ME.



SOME OF THE MARINE EQUIPMENT OF THE ROCKLAND-ROCKPORT LIME COMPANY.
1. Tugboat. 2. One of the Company's Steel Barges.



THE ROCKLAND-ROCKPORT LIME COMPANY.
1. Scene at the Kilns. 2. One of the Company's Quarries.

ings and on thousands of flats, tenements and apartment houses in New York City. The United States Customhouse in New York used over 7,000 barrels for scratch, brown and finishing. Other buildings where Rockland-Rockport lime was used are the Belmont and Plaza Hotels, the United States Express Building, etc. In Brooklyn over 10,000 barrels were used on the fifty-six three and four-story apartment houses of the Henry Roth Building Company. Rockland-Rockport lime today, as in the past, occupies a very strong position in the lime trade. This has been and is made possible by the fact that, to begin with, their quarries for quality (96 per cent pure calc) are unequaled by any in the United States. That the lime is manufactured by careful labor, backed by ample capital; that they control the transportation of their product from the quarries to the dealer, and that Rockland-Rockport lime has given satisfaction for over a century and is in greater demand today than ever.

Manager Campbell of Campbell & Son reports that they have been operating four kilns at Strasburg, Va., the past year, and have had a good business; in fact, the Shenandoah Valley is more prosperous today than at any time since the war.

R. H. McCoy of the McCoy Lime Company, Strasburg, Va., visited some of his customers in Western Pennsylvania the past month and dropped in on A. A. Stevens of Tyrone and Charles Bye of the Charles Warner Company, Wilmington, Del.

SOUTHERN CALIFORNIA.

BY A STAFF CORRESPONDENT.

By common consent, for many years F. O. Wyman stood in the same relation to the Southern California lime manufacturing trade that W. B. Hill did in the Kansas-Missouri district. Consequently when I met Mr. Wyman I expected to find a gentleman who could furnish interesting information regarding business in this section. This expectation was fully realized.

Though Mr. Wyman is identified with two lime companies and a Portland cement company as general manager, he has these interests so well equipped with efficient men that he is relieved of the details to such an extent as to admit of his giving his attention to the larger interests and yet have time to entertain the stranger within his gates. It so happened that when I called he was at the office and warehouse of the Union Lime Company, 209 San Pedro Street, though he is usually to be found at the office of the Summit Lime Company, 303 Henne Building. The company are distributors of Blue Summit lime, Best's Keene's cement, Youngstown expanded metal lath and fireproofing, Hercules plaster fiber, United States Gypsum Company's plaster products, fire brick and clay.

Mr. Wyman informed me that the company had two limestone quarries—one 110 miles and the other 120 miles distant from Los Angeles, the farther one being at Tehachepi, which is the place where they manufactured the Blue Summit lime. This lime Mr. Wyman claims produces more mortar than any lime made in the United States. It is a quick-acting yet cool-working lime and makes the finest finishing lime. In shoved-up work 1,900 brick have been laid to the barrel (220 pounds net), and it does not pop or show hair streaks in wall jobs. In this city lime is sold in barrels (the company makes its own barrels) and at the works three-quarters of the output is shipped in bulk. Mr. Wyman said they have been making this brand of lime for eighteen years and had an exhibit at the St. Louis Exposition. In burning they use wood and oil. This combination, after considerable experimenting, was found to effect a saving in cost of fuel on the basis of one barrel of oil to a cord of wood. In order to secure flowing, distillate is used to thin the petroleum.

In the construction of the kilns steel casing was used above the arches with stacks about 40 feet. The kilns are eighteen to twenty feet from the arches up, with hoods for promoting the draft.

The Oro Grande is a blue marble limestone, 97 per cent carbonate of lime. It burns dark and slakes slowly; consequently this brand should be worked quickly.

The company is a large handler of Portland cement and recently secured the contract of the United States Government to supply for the new Government building 15,000 to 20,000 barrels Universal Portland Cement Company's cement. Another job—the Wright & Callender Building—will require 4,000 barrels, which contract will also be filled with the Universal Portland Cement Company's brand, which Mr. Wyman said they had sold for the past two years. In addition they are selling considerable of the Kansas City Portland Cement Company's cement, which is giving excellent satisfaction in their trade. In plaster they deal in Angelus and Bull Dog hard wall, Challenge finishing, and Bull Dog finishing and molding plaster. Sackett plaster board is carried in stock; also Keene's cement, metal lath, etc.

Mr. Wyman is a native of Ohio and has for over forty years been identified with the manufacture of lime, in which business he originally engaged in Northern Ohio, and the stone kiln that he built is still being run.

The Sunset Lime Company, 440-450 San Pedro Street, do a large business in lime, lath and cement, and I learned in talking with H. S. Coppock, one of the company, that besides local business they ship full cars of cement to outside points. Mr. Coppock said they were behind on their orders and needed quite badly some forty cars of Portland cement. The brand which they handle is Indian Portland from Neodesha, Kan. They also sell the Summit and Puntenney brands of lime from the Tehachepi Mountain and Taylor's hydrated.

J. A. Clark, the senior member of the company, was the man who blazed the way in the introduction of cement plaster, the brand which be introduced in this market being the Alpine. This was about twelve years ago, and now three-quarters of the buildings being erected are plastered with hard plaster, the principal brand beside Alpine, being Angelus and Holdtite. Mr. Coppock said there was a good deal of machine-mixed mortar sold. The leading brand of German Portland cement is the Alsen and is the standard as to quality. Mr. Coppock is very familiar with the Kansas cement plants, having paid that district several visits, and he added he would be glad when the manufacturers of Portland cement got around to very generally adopt the paper sack. The bulk of the domestic cement sold in this section is in cloth packages.

It has been claimed that concrete for building construction has been more extensively used in Los Angeles, Cal., than in any other city in the United States. That a dealer in cement should be a patron saint for this form of material in the construction of his warehouse seems consistent and praiseworthy; consequently when I met H. De Garmo, president of the Los Angeles Lime Company, 363-365 East Second Street, I was able to commend his having met these conditions in the erection of the warehouse of the company.

Mr. De Garmo is looked upon as being the Nestor of the lime trade of the city, and enjoys the distinction of being the kind of man for whom the celebrated Greek hunted with his lantern. Besides lime the company handles the Kansas Portland Cement Company's Sunflower brand of cement, Taylor's hydrated lime, Alpine and Angelus brands of cement plaster, steel lath ("Herringbone" expanded) from Youngstown, O., Nephi casting plaster, fire brick and clay. The company was established eighteen years ago, said Mr. De Garmo. In reply to an inquiry about cement conditions he said there were a number of brands on the market—domestic and foreign. Among the former the Kansas product largely predominated and was fast supplanting the imported, which consists mainly of the German article. Of foreign cement he estimated the stock to be upwards of 200,000 barrels and he believed it likely a good deal of it would have to be marketed at a loss, since it was held at a higher figure than the Kansas cements of better test were selling.

At the office of the Oro Grande Lime and Stone Company, Third and San Pedro Streets, P. C. Thompson, the manager, said that the company manufactures its own lime. The rock is blue in color and makes gray lime, cold in character. A peculiar feature of the Oro Grande rock is that it does not crumble when burnt. When converted into lime the lumps are of the same size as the original rock. Even rocks of fifty pounds in weight preserve their original size. It is high carbonate, testing 98 per cent. Another peculiarity is that it possesses some of the strength of cement. Wood is used in its manufacture and the kilns are three miles from the mountain where the stone is quarried. If used for building purposes the stone polishes black.

Large quantities of this lime is used in refining beet sugar, and such are its properties that it can be used three times. In building the office of the company this lime was used both for the walls and interior finish. The outer walls have the appearance of a cement-built structure. The mortar does not pop, and the rock from which the lime is made has no cubes, in which respect it resembles granite. Notwithstanding, however, the superior quality of this lime it sells hard because it requires three to five days in which to slack it. It also needs to be mixed thoroughly. Where it is handled properly, said Mr. Thompson, it gives excellent satisfaction. It is shipped mostly in bulk as fast as made. Steel cylinder kilns are installed at the plant. The brand is "Red Star." Mr. Thompson said that cement plaster had a large sale for interior work at the expense of lime. For cement they sell the Colton Portland, made at the town of that name about sixty miles from Los Angeles.

The Only Hydrating Plant.

There is in Southern California but one lime hydrating plant. From its proprietor, W. H. Taylor, I gleaned some interesting particulars relating to his business. Mr. Taylor says he is not a manufacturer of lime and that, besides buying from the Puntenney Lime Company, he hydrates lime for the trade on a toll basis. Asking him what process he had installed, he laughingly rejoined, "Taylor's," and then added by way of explanation that his plant was an evolution in that it was the result of patient, continuous experiment. For a time a series of drawbacks were encountered, but finally these were overcome, though even now its successful hydration depends on the source from which the lime comes.

Mr. Taylor's method of introducing hydrated lime is to make a big contractor the following proposition: He offers to furnish a ton as sample. If it is not satisfactory and no more is used, he makes no charge for the lime, but if more is ordered for the job, the sample ton is to be paid for.

Proceeding with Mr. Taylor to the mills, I found he uses a Sturtevant crusher and a Stedman mixer with air separation. In his process he does not pulverize, but crushes the lime to a pea size, then hydrates with the proper quantity of water. Care is used in providing ample conveyors to carry the non-hydrated particles back again to the hydrator and in eliminating the foreign matter. Mr. Taylor has so perfected the working of the plant that it is only half an hour from the car to the sack. Regarding the sack, he uses good secondhand grain bags which hold 100 pounds, for which he charges 15 cents, with return privilege at same figure if in good order.

At present he is making twelve tons per day of eight hours, and as the plant is lighted by electricity, he is in a position to make night runs when required. A 30-horsepower Westinghouse alternating current motor provides power for running the plant.

Mr. Taylor said that under his system it would be possible to hydrate 80 tons per day in a building having but one floor and basement, say 40x60 feet for plant proper. Hydrating of lime has successfully overcome the worst of the objectionable features of using lime for plastering, which really arises from the overburning of the lime in the kiln.

Overburning of lime drives out some of the oxygen of the normal oxide and converts it into a suboxide of calcium. In overburned lime, therefore, you have present more or less suboxide associated with the normal oxide. The suboxide of calcium will not combine with water, but does slowly take up oxygen from the air and become normal oxide again with its avidity for water, doubling in volume when it receives it. This is the cause of "pitting" or "popping." Calcium suboxide in the plastered wall slowly appropriates oxygen from the air and then becomes normal oxide. As normal oxide it quickly combines with the first moisture coming in its way, hydrates, doubles in volume and so pits or pops in the wall. By sufficiently aging the mortar these changes occur in the mass instead of in the wall, and you thus avoid the "pitting" in the wall.

Mr. Taylor is an ardent ROCK PRODUCTS man, having been a subscriber since it was started, and seemed to feel a personal interest and pride in its growth.

Just Starting Up.

GREAT BARRINGTON, MASS., Nov. 28.—The Canaan Lime Company is this week surveying for a highway and sidetrack to open up a lime quarry on the farm in Sheffield recently owned by C. R. Knight. The latter has bought a place in Manchester, Conn.

The proposed highway passes through lands of H. Z. Cande, John Gillighan, N. E. Gordon and George B. Kirby. Several weeks ago the Lime Company made tests of the lime to be had on the farm and found it of high quality. They expect to proceed continuously with the development of the quarry and the construction of necessary kilns.

Commences Operations.

NEW BRAUNFELS, TEX., Dec. 19.—The Dittlinger Lime Company commenced operations today. Their gas producers work splendidly. They are taking orders and have enough on hand to run one kiln for at least a month. The other kilns will be started as soon as possible, and the hydrating plant will be operated as soon as they have a supply of lime on hand.

To Develop Lime Deposits.

YREKA (SISKIYOU COUNTY), CAL., Nov. 20.—The California Lime Company has been incorporated under the laws of Arizona, with a capital stock of $500,000. The office will be in Oakland, but the works are in Siskiyou County. The directors are: Albert Switzer of Oakland, president; J. H. Shearer of Oakland, secretary and treasurer; A. W. Tennant of Yreka, general manager; Charles B. Howard of Yreka, and C. K. Loomis of Oakland.

The company has 640 acres of land on which are four mountains of almost solid carbonate of lime, capable of being tunneled throughout upon limestone only. It is situated about three miles from Gazelle, within a short distance from the Southern Pacific tracks. John P. Harrigan, analytical chemist, says that samples of lime quarried from this property are practically free from magnesia; that the lime carries only small quantities of silicia and iron, and is considered exceptionally fine quality for finishing. The supply is inexhaustible and the company is now excavating preparatory to erecting kilns and will be in actual operation within a short time. This will add one more important industry to Siskiyou County.

T. E. Fleischer of Sheboygan, Wis., and Charles Bishop of Chicago took a trip to Toledo, O., recently to visit some of their friends. They are very enthusiastic about Toledo.

The Hoag Company's new plant at Strasburg, Va., will have three kilns for manufacturing lime. The foundations are in, and Manager Funk stated they would be ready for business by spring if the weather man don't shut them out.

Change of Ownership.

BISMARCK, N. D., Nov. 26.—James McDonald has purchased from the White Lime Company of Omer their lime kiln situated about three miles east of Omer on the State road to AuGres, the purchase price being $7,000. The property includes forty acres of land with a bed of white lime rock seven feet deep near the surface another bed of building stone of equal thickness lying underneath it.

There is but one kiln on the property, which has been operated for several years, the capacity being about 250 bushels per day. The new owner will continue to operate the kiln during the coming winter, but will increase the capacity early next season.

An Interesting Experiment.

CARTHAGE, N. Y., Dec. 17.—Some interesting experiments at the plant of the New York Lime Company, Natural Bridge, have just been completed. These experiments demonstrated the advisability of burning oyster shells to extract the lime thereof. Lime is said to be found in oyster shells in about 99 per cent, but the general average is 96 per cent. The oyster shells were burned in the new rotary kiln, which is one of the most successful rotary kilns in operation. The operation was witnessed by W. J. Fox of New Orleans, J. H. Fox of Cleveland, O., and R. G. Spencer, Jr., of Carey, O., who were highly pleased with the results of the test, as the oyster shells were perfectly burned and an excellent quality of lime produced by the so-called dry test.

Oyster shells have been burned for lime by the old method of vertical kilns with charcoal. But this method has not proved satisfactory or economical, as only a small amount of lime can be extracted at a single burning, and it requires continued burning to make the entire extraction.

The success of the burning by the rotary kiln process easily demonstrated the practicability and economy of extracting lime from oyster shells and may mean the installation of a rotary kiln plant at New Orleans, La., or the immediate vicinity, which will be fully protected by patents of the New York Lime Company. This company is the first to use the rotary kiln process and is one of the most successful in operation.

Obituary.

DENVER, COL., Dec. 20.—W. H. Hinman, president of the Colorado Lime and Fluxing Company, with offices in the Equitable Building, died recently at 1430 Marion Street, where he made his home. Death was due to acute asthma and heart trouble.

Mr. Hinman had been a resident of Denver for thirty-five years, coming here from Battle Creek, Mich. He was connected with the company of which he was president for fifteen years. He leaves an estate valued at $100,000, all of which will go to a sister, Mrs. H. W. Partridge of Detroit, the only relative living. Hinman was 56 years old and a bachelor, and his loss will be a severe one to the industry at large.

James Deturk of Reading, Pa., has opened a quarry for lime-burning purposes.

The Empire Lime and Stone Company, Moundsville, W. Va.; capital stock, $500,000. Incorporators: J. E. Hughes, J. E. Hadding and E. D. Leach.

The Ravena Lime Company of Albany, N. Y., has been purchased by William Young of New York, who will continue the business.

Harry Stewart of Kokomo, Ind., is building three kilns at his lime plant, which greatly increases his output.

The Austin White Lime Company, Austin, Tex., incorporated with $50,000 capital stock by A. F. Martin, J. A. Martin and Alfred H. Robinson.

The Brightwater Lime Company, Brightwater, Ark., will operate a plant with daily capacity of 160 barrels of white lime. J. D. Torbett is president and D. H. Torbett secretary and manager.

The Lime Stone Company of New Jersey; capital stock is $75,000. The incorporators are N. H. Hart of Newton, W. G. Bailey of Glenwood and E. C. Meyer of Andover.

The Queen Brick and Lime Company, Seattle, Wash; capital, $750,000; M. F. Shaw, R. L. Lusby, G. B. Lazier, L. M. Presnall, H. C. Applegate and L. S. Treen.

The Western States Structural Material Company has been incorporated under the South Dakota laws for $125,000. They will establish a plant and supply lime for mining and sand-lime brick purposes. E. T. Krebs of Carson City, Nev., is president.

The Alleghany Lime Company, Christiansburg, Va., organized with $25,000 capital stock to quarry fluxing stone, manufacture lime, cement and kindred products. J. S. Vaughan, Shawsville, Va., president; J. B. Hamilton, vice-president, and A. A. Phlegar, Jr., secretary-treasurer, both of Christiansburg.

Cement.

The Wide-Awake Promoter.

Taking advantage of the attack of "financitis" which was severely felt in some quarters, but from which our wonderful country is now rapidly recovering, the enterprising cement promoter is again plying his vocation, using as a means the columns of the daily newspapers. Under the heads "Concrete Is King," "Immense Profits in Portland Cement," etc., may be found various descriptions of the "Portland cement industry," "portraying the commercial evolution of cement from the primitive ages to the present day briefly and truthfully," "the absolute facts regarding cement," etc., etc.

Concrete is king. There is a profit to be made in the manufacture of Portland cement, but to make this profit and to pay dividends to the stockholders requires business ability, brains, honesty and hard work. All of the successful plants now manufacturing Portland cement in the United States are high types of the ability possessed by their respective managements. The failures, and there are quite a number, represent the feeble efforts made by incompetent individuals who have attempted to realize the "immense profits" boosted by the promoter with his advance agent methods.

Our recent financial flurry has been a practical lesson to every concern from the president down to the office boy on the worth of conservatism. Our advice to the recipient of any of these "immense profit" circulars is to investigate thoroughly before placing the savings of years in jeopardy. In other words, look before you leap.

The Western States Portland Cement Company closed down on the 15th of December to overhaul the plant for the season of 1908. The entire working force has been returned for this purpose.

"Most successful season in our history," was the remark of H. S. Hayden, manager of the Empire Portland Cement Company's plant at Warners, N. Y., which has just made its usual shut-down for the winter.

Work has been suspended on the Humboldt Portland Cement Company's plant at Humboldt, Kan. Contracts for the general construction remain *in statu quo*, indicating that this plant will not be a producer in 1908.

Another step in the concentration of the Portland cement industry in Michigan is the removal of the offices of the Elk Lime and Cement Company from Petoskey to Elk Rapids. Homer R. Aly is now manager of the company, succeeding Elliott M. Aly, resigned.

Close of navigation, shortage of cars and light demand, coupled with obligatory repairs, are the reasons advanced for the shut-down at the Hecla Portland cement plant at Bay City, Mich. Manager Elvin W. Leh says that operations will be resumed about January 1.

The reported merger of cement plants in southern Ohio and adjacent territory is another creation of a vivid imagination. O. Linnis Gooch's attempt to purchase the Ironton plants was the basis of the "merger," which was accepted as gospel by many of the trade papers.

A decree of foreclosure in the suit of the Union Trust Company of Detroit against the Great Northern Cement Company of Baldwin, Mich., has just been ordered in the United States court. The original mortgage of $600,000 was given in 1904 and now amounts to $658,781.75.

Extensive repairs are now being made at the plant of the Sandusky Portland Cement Company, Syracuse, Ind. A subway will be constructed under the B. & O. tracks to enable the company to transport marl to the mill on its own tracks from the lake, some twelve miles distant.

Work is progressing steadily at Concrete, near Florence, Colo., where the Rio Grande has completed a switch to the site of the United States Portland Cement Company's plant. The foundations are practically finished, and sixty cars of machinery will be installed immediately. The plant is being built on the unit plan and will start with a 500-barrel daily capacity.

White Portland Cement.

In addition to the marvelous increase in the many and varied uses to which Portland cement is adapted, comprising practically every form for which are used wood, iron, steel, clay, stone—in fact, practically every conceivable form of construction that man's ingenuity may devise—the year 1907 has also found our great country leading in the production of a white Portland cement.

France was formerly looked to for a stainless Portland cement, and for many years that country commanded the market for the small quantity of this material used, which was considered in the light of a luxury rather than a necessity, owing to the small quantity manufactured and consequent high cost.

Today we have white Portland cement manufactured in the Berkshire district, Mass., and at Kimmel, Ind., and another plant for its manufacture is now practically completed at York, Pa. Truly there is nothing impossible to the genius of the Yankee, who is like the proverbial camel. When once his nose is under the tent, it is not very long before his entire body occupies the interior.

"Every department in full running order," is the report from the York Portland Cement Company at Portsmouth, O.

A petition in involuntary bankruptcy has been filed in the United States court at Buffalo by the Iroquois Portland Cement Company.

The general offices of the Alma Cement Company, Wellston, O., have been removed from the Greenburg building to the new Clutts building, where the company has extremely handsome headquarters.

Work is progressing steadily in the construction of the Belleville, Canada, plant of the Lehigh Portland Cement Company. McDermott Bros. of Allentown, Pa., are erecting the boiler work for this new plant.

Frederick G. Myhiertz, formerly engineer of construction in the Bureau of Building Inspection, Philadelphia, has associated himself with the new Seaboard Portland Cement Company, who are building a large Portland cement plant on the Hudson.

The Newaygo Portland Cement Company, Grand Rapids, Mich., have closed for the winter. This is not due to lack of business, but it is the usual custom of Michigan mills to repair their plants during the winter months to be in the best possible shape for the early spring business.

Owing to the collapse of a steel girder supporting the roof of the powerhouse of the Virginia Portland Cement Company at Fordwick, Va., on December 14, the entire plant has been stopped. The entire building, which housed two 2,000-horsepower engines and two smaller ones, was wrecked.

Dr. August Ryckerhoff of Biebrich, Germany, accompanied by his wife, was a recent visitor to this country. "German cement export to the United States has almost entirely ceased, due to the introduction of the rotary kiln in the manufacture of American Portland cement," says Mr. Dyckerhoff.

Another plant that will come into bearing early in 1908 is that of the Bonner Portland Cement Company at Bonner Springs, Kan. Foundations and buildings are practically ready for the various machinery, which it is expected will be on the ground before Christmas, in which event it is likely that March 1 will find the new material ready for the market.

Operations will likely be resumed about January 1 at the plant of the Standard Portland Cement Company, Napa Junction, Cal. Car-shortage was the main reason for stoppage of manufacture, though the packing department has been working steadily on the large stock of cement accumulated during the scarcity of cars.

The Alpha Portland Cement Company of New Jersey, with headquarters at Easton, Pa., has increased its capital stock from $2,000,000 to $6,000,000. The company owns the Martins Creek Portland Cement Company at Martins Creek, Pa.; the capital stock of the Alpha Portland Cement Company of Pennsylvania, and a controlling interest in the Annville Stone Company with quarries at Palmyra, Pa. The president is W. M. McKelvey.

The latest addition to the Cowham System of Cement Plants, the Northwestern States Cement Company at Mason City, Ia., will have a capacity of from 4,500 to 5,000 barrels a day. The following officers have been elected to serve for the ensuing year: President, W. F. Cowham, Jackson, Mich.; vice-president, E. J. Breen, Ft. Dodge, Ia.; treasurer, C. H. McNieder, Mason City, Ia.; assistant treasurer, N. S. Potter, Jackson, Mich.; secretary, W. H. L. McCourtie, Jackson, Mich.

THE NEW YORK MEETING.

Fifth Annual of the American Association of Portland Cement Manufacturers.

The fifth annual meeting of the American Association of Portland Cement Manufacturers was held in New York City at the Hotel Astor, December 9, 10 and 11.

On the afternoon of the 9th a number of the aggressive salesmen got together and discussed the possibilities of an organization, and a little preliminary work was done, in order to report at the convention session, which was the time specified for the permanent organization of the salesmen's branch of the Cement Association. The committee, through the courtesy of the new president, Albert Moyer, were entertained at dinner, and when they came in it was late and the conference was on. However, this did not phase Secretary Johnson, and he went through the preliminaries to the satisfaction of all. The meeting was called to order and the following officers elected:

Albert Moyer, Vulcanite Portland Cement Company, Philadelphia, president.

J. U. C. McDaniel, Chicago Portland Cement Company, Chicago, vice-president.

C. L. Johnson, Castalia Portland Cement Company, Castalia, Ohio, secretary.

The executive committee is composed of the following: L. V. Clark, Lawrence Cement Company, Philadelphia; R. E. Griffith, Lesley & Trinkle Company, Philadelphia; W. G. Hartranft, W. G. Hartranft Cement Company, Philadelphia; George Sykes, Lehigh Portland Cement Company, Allentown, Pa.; B. F. Affleck, Universal Portland Cement Company, Chicago; E. R. Stapleton, Iola Portland Cement Company, St. Louis; P. B. Beiry, Sandusky Portland Cement Company, Sandusky, O.; W. P. Corbett, Alsen's Portland Cement Works, New York City; C. B. McVeagh, Western States Portland Cement Company, Independence, Kan.; A. H. Craney, Jr., St. Louis Portland Cement Company, St. Louis.

The object of this association is the promotion of the welfare of the members and the improvement of conditions in the sales end of the business by becoming better acquainted. It was a very interesting session.

THE ANNUAL.

The executive committee of the Cement Manufacturers' Association met Monday evening and discussed the program and other matters of importance.

On Tuesday the national meeting was held, and it was one of the best the association has ever had. It was led by President Lober in his own way and everyone was busy. President Lober, by the way, was reëlected, and Mr. Wilson of Philadelphia was made permanent secretary. Very few of the regulars were seen in the lobby, and when the shades of night fell and the annual banquet was announced the members of the association, about 100 in number, began to drop into their Sunday clothes. The best banquet ever held was conducted in a high-class manner. When coffee had been served President Lober, who always acts as toastmaster, called on a number of the gentlemen, and much dry wit was brought out in their speeches.

E. M. Hagar, president of the Universal Portland Cement Company of Chicago, made a talk on "Why a Contract is a Contract." W. P. Corbett of Alsen's Portland Cement Company, New York City, spoke on "Why a Contract is Not a Contract," and had all the dope in hand to prove it.

R. W. Lesley of the American Cement Company, Philadelphia, made an address, and Albert Moyer of the Vulcanite Portland Cement Company, Philadelphat, talked on "General Conditions from the Viewpoint of the Sales Manager." These talks interested the banqueters. Last, but not least, the great (though short) George S. Bartlett of the Western Portland Cement Company, Milwaukee, was stood on a chair and made one of the speeches that have made him famous. His word pictures included nearly every one about the board. His talk was full of good things and proved that he should have been an astronomer or biographer instead of a cement manufacturer. It was so good that it really should be printed, but owing to his modesty we killed it after it had been put in type.

CHARLES L. JOHNSON,
General Sales Manager Castalia Portland Cement Company, Sandusky, O.

J. U. C. McDANIEL,
General Sales Manager of Chicago Portland Cement Co.

The orchestra was perhaps the "best ever." Cement manufacturers are great singers, and this affair, which was in the hands of Frank W. Douglas, was most successful from a musical standpoint. When any of the singers started to sing the orchestra was "Johnny on the spot," and Mr. Bartlett occasionally waved his baton in a very artistic manner.

THE SECOND DAY.

Wednesday was open day meeting, and several excellent papers were read, among them one by W. A. Aiken, general inspector of materials for the New York Rapid Transit Commission, "Conclusions from the Application of Theoretical Analyses of Commercial Portland Cement." Sanford E. Thompson gave a talk on "Concrete Chimneys," which was very much appreciated and is printed herewith.

REINFORCED CONCRETE CHIMNEYS.

(Abstract of Report of Investigation made for the Association of American Portland Cement Manufacturers.)

By Sanford E. Thompson,* M. Am. Soc. C. E.

The first reinforced concrete chimney was built in 1898 by the Ransome & Smith Company for the Pacific Coast Borax Company, Bayonne, N. J. Since that time about 400 stacks have been completed, and these are distributed through nearly every state of the Union and Canada. These stacks range in height above ground from 50 to 352½ feet, with inside diameter ranging from 4 to 18 feet, the majority of them being 150 to 200 feet high and 5 to 6 feet in inside diameter.

* Consulting Engineer, Newton Highlands, Mass.

ALBERT MOYER,
General Sales Manager Vulcanite Portland Cement Company, Philadelphia.

Although the large majority of these chimneys have given satisfaction to their owners up to the present time, the failure of a few and serious cracks in several others have caused a number of inquiries to be made as to the reliability of reinforced concrete for chimney construction.

As a consequence of such questions your association has delegated the writer to investigate the causes of the faulty structures, and the condition of the chimneys now in service, with a view of reporting whether reinforced concrete may be safely recommended for chimney construction.

With this in view the writer has visited and carefully examined a number of concrete chimneys, has investigated the causes for the defects in these structures, and has consulted with representatives of some of the companies which make a specialty of this type of construction. Through inquiries made by your association and by personal correspondence direct reports have been received upon nearly 150 chimneys.

The results of this special investigation taken also in connection with two or three professional cases, in one of which opportunity was afforded for examination of the material in a chimney which was taken down, provide data for this report.

Conclusions.

It is thus possible to present quite definite conclusions and recommendations with reference to this class of construction. The general conclusions which follow will be considered in detail in subsequent portions of the report and reasons will be given for their adoption.

1. Reinforced concrete is a suitable material for chimney construction.

2. Reinforced chimneys must be designed and built upon the same principles and by the same methods which have proved essential in other types of reinforced concrete construction.

3. The defects and failures which have occurred in chimneys thus far built have been due to poor workmanship, or faulty design, or the use of the wrong concrete mixtures, or to all three.

4. The methods of construction at present being followed are in many cases defective and liable to lead to subsequent failures, and they should be radically modified.

Investigation of Chimneys.

As already intimated, several reinforced concrete chimneys have fallen while being constructed or at some later period, and the cracks developed in a number of others have raised serious questions as to their safety. On the other hand, in general chimneys built of reinforced concrete have given perfect satisfaction, this being attested by the fact that in many cases the owners have repeated their orders for such stacks, one corporation, for example, having built fourteen of them at its plants in various parts of the country.

The question, then, which confronts us is whether the faulty structures reported are due to qualities inherent in reinforced concrete; or whether they are due to defects in design and methods of construction which may be amended in the future; or whether they may be considered simply as accidental failures to which all engineering structures are occasionally liable. In other words, shall we condemn the building of chimneys of reinforced concrete, or may we disregard the comparatively few actual failures as accidental or shall we approve of building concrete chimneys, at the same time insisting that, to be sure of permanence, the methods of design and construction must be in some cases radically changed?

My investigations and examinations of chimneys have led me very decidedly to the third alternative. In other words, the writer is convinced that reinforced concrete chimneys can be built which are entirely safe and practically indestructible, while recognizing that many have been erected with an utter disregard of the fundamental principles which have proved essential in all other classes of reinforced concrete construction.

In the first place, as we consider the problem, two principles must be recognized which may be termed axioms in engineering science. Namely, failures do not necessarily throw doubt upon any class of construction unless the causes for failure are incapable of remedy. On the other hand, the fact that a structure or many structures have not failed is no proof that they are properly designed and built, since they may not have met with the most serious conditions or may be already stressed to a point so near breaking as to be liable to future deterioration from heat and frost and continued vibration.

To review the subject, therefore, the examination must be especially directed to the causes of the occasional failures and defects reported, with the object of determining if possible whether the conditions which have produced the troubles may be present in other chimneys and how they may be corrected in the future to prevent recurrence.

Eight cases have been reported in which chimneys have either blown over or have been taken down because they were defective, and ten or twelve others have been heard from in which cracks have developed which cause serious apprehension. In nearly every case of failure the chimney has been rebuilt by the construction company.

One of the failures most widely known is that which occurred at Peoria, Ill., in 1906. The chimney had been completed about three weeks when it gave way at the offset or projection, the upper part crumbling as it came down, and the concrete breaking into small chunks. The T-shaped steel stripped clean from the concrete. The cause is stated to be a poor batch of concrete at the offset, although the manner of failure would indicate that the concrete in the upper portion also was not of the best quality.

Another case is cited in which the chimney stood for nearly two years, and then blew over in a wind storm of about forty-five miles per hour. Here, as in the other case, the concrete stripped from the steel, and the fall was attributed to poor adhesion between concrete and steel.

A stack built in very cold weather in Canada blew over when the concrete, which evidently froze without setting, thawed out.

A case occurred in 1905 where the upper 30 feet broke and slid off while it was being topped off, the accident being charged to the fact that the mortar had not properly set.

This year a chimney in the west after about two years' service developed such cracks that it was considered dangerous, and was taken down and replaced.

Another stack was torn down before the boilers were fired because of defects in the workmanship.

The most recent failure occurred this last summer in Wisconsin where a chimney blew over only two weeks after its completion in a severe tornado which damaged many other structures. The blame is laid upon the unusual severity of the storm and the freshness of the concrete.

Considering the chimneys which are now in commission, we find that in general they are subject to more or less checking or cracking. This need not necessarily condemn the structure since the reinforcement may be sufficient to safely hold together the blocks formed by the cracks, and yet it would seem with the means we have of introducing steel wherever needed that all cracking ought to be averted, especially as there is always danger that the cracks may increase from wind vibration, heat and frost.

Our reports indicate in most cases that the cracks are not considered dangerous by the owners of the stacks. In several instances, however, long vertical cracks have appeared, and in others horizontal cracks have been found in the lower portion which have given serious concern. One chimney, straight when built, has since leaned about three to four inches from the vertical, beginning at a point about two-thirds way from the base. Another informant reports soft spots in his chimney.

Nearly 400 reinforced concrete chimneys have been built in this country, and direct reports have been received by your association and by the writer from nearly half of them. The failures cited amount to about 2 per cent of the total number with at least 2 to 3 per cent more of doubtful safety; it is probable that most of the seriously defective cases have been brought to light since special care has been expended in running down doubtful ones. Of the others and even where personal examination has revealed somewhat serious cracks, the general verdict of the users is "satisfactory" and "good."

Reinforced concrete chimneys offer special structural difficulty because of the heights to which they are carried, and the accompanying difficulty of obtaining the very best of workmanship. For this reason we might expect a somewhat higher percentage of error than in ordinary reinforced concrete construction. Even taking this into consideration, however, 4 per cent appears to be a somewhat alarming percentage of defective construction. But the vital question is whether even these few cases may be passed over as isolated cases of defective construction, or whether they afford an arraignment of other chimneys now standing, and whether they predicate a similar percentage of defective construction in the future.

An examination by the writer of a chimney which was being taken down, if representative of others, throws considerable doubt upon their durability. On the other hand, it affords means for pointing out definitely the errors which must be guarded against in the future. This chimney showed soft spots in three of the sections, where the concrete could be readily loosened clear into the steel. The concrete was porous throughout, and scarcely bonded between the 6-inch layers. Samples cut from good portions of the concrete—which was a mortar one part cement to three parts sand—gave an ultimate strength of about 1,200 pounds per square inch or about one-half the strength of a good 1:3 mortar laid with a sufficient quantity of water. A month after this inspection the chimney was taken down, the 6-inch layers being readily loosened from each other and cut in pieces by a pneumatic chisel, and the concrete was found to vary materially in hardness. Of special importance was the fact that the mortar in the angles of the T-bars was weak and porous, showing scarcely any adhesion to the steel. Further investigation showed that the concrete, of mortar, used in the construction was of such *extremely dry consistency* that even where well rammed, the moisture did not cover all parts of the surface of a layer nor did it produce a proper bond with the steel.

From such evidence it is impossible to avoid the conclusion that other chimneys built by similar methods, with so dry a mixture as to give a weak, porous concrete and to provide insufficient adhesion to the steel, are likely to cause trouble in the future.

This appears to be a severe arraignment of concrete chimney construction. And yet, to be fair, it must not be overlooked for a moment that every one of the points brought out—the low strength of the concrete, the dry mix, the porosity, the lack of adhesion to steel, the lack of bend, and the soft spots—indicate construction which would not be tolerated in any other case of reinforced concrete work. It has been proved beyond a doubt, and reiterated in print and verbally, that reinforced concrete *must be mixed wet* in order to adhere to the steel and protect it from corrosion; that a factor of safety of four is certainly a minimum in compression; and that a concrete structure must be essentially monolithic. It should be clearly understood also that in the chimney to which the writer has just referred all of the essential elements were disregarded.

The defects noted are not inherent in chimney construction. In other words, from a practical standpoint it is necessary to follow in chimney construction the methods which have been proved necessary for success in other structures made from reinforced concrete. As a proof of this we may simply point to the indisputable fact that concrete chimneys have been satisfactorily built with a proper factor of safety and with a wet mix which insures a positive bond to the steel, and with a dense concrete which protects the steel from corrosion and permits the bonding of the various parts of the structure.

Since reinforced concrete is everywhere being constructed on these principles, and is proving durable and satisfactory, and is being used under all conceivable conditions, we have ample cause for security in reinforced concrete chimneys provided they are properly designed and constructed.

EFFECT of Heat Upon the Chimney—(6)—

In the above discussion the effect upon the chimney of the interior heat from the boilers is not directly referred to. Just what part this has played in the faults which we have noted is uncertain. Undoubtedly the interior heat adds to the stress in the concrete, and thereby increases the tendency to crack, especially at points near the top of the inner lining. This simply indicates, however, that the quantity and arrangement of the steel reinforcement should be adapted to resist this extra stress.

When reinforced concrete was first introduced it was questioned whether with changes in temperature the concrete and the steel would not expand and contract unequally, so as to make them separate from each other. If this were the case, it would be especially detrimental to a structure like a chimney where the range in temperature is greater than usual. It has been proved conclusively, however, that concrete and steel have substantially the same coefficient of expansion, that is, with any degree of heat they expand and contract almost exactly alike. For this reason there can be no separation due to change in temperature.

The interior heat affects the shell in another way because concrete is a poor conductor. The interior surface for a depth of an inch or two is heated very much hotter than the exterior surface, and so tends to expand and crack the colder outside surface. This effect is most marked upon a thick wall, the action being similar to that of a thick glass bottle which breaks more readily when hot water is poured into it than does one of thin glass. The stress or pull on the outside surface must be met by increasing the amount of circular steel and placing it near to this outside surface.

The effect of heat upon the concrete material itself is also a point which must be considered in chimney design. In the earliest chimneys built, the concrete lining extended the full height, while in later ones it has been generally carried up to about one-third the height. Usually the lining has been reinforced concrete, although in some cases firebrick has been used. A few chimneys have been built with no lining at all.

While much remains to be learned with reference to the effect of heat upon concrete, it is known to be a most excellent fire-resisting material, although it has been found that a temperature as high as 1500° Fahr. continued for only two or three hours will draw out the water of crystallization so as to take out the strength for a depth of one-half to one inch. Lower temperatures affect the material less, and tests at the Watertown Arsenal indicate that a good cement mortar will not be appreciably injured at 600° to 700° Fahr. Tests of actual chimney temperature are extremely meagre, but from records available we may say that the temperature in an ordinary chimney seldom exceeds 700° Fahr. at the base, while 400° to 500° is more usual. It is a fact not universally known among engineers that the temperature in a chimney remains quite high even in its upper portion. For example, in the test of one chimney the temperature at three-quarters of the height above the base ranged only 10 to 20 per cent lower than at the flue. This makes it evident that if the lining extends only one-third of the way from the bottom, the design of the concrete shell above it should be adapted to resist considerable heat, while greater safety may be insured by extending the lining far above the lower third.

Your association has received no reports of injured linings. Many have never examined the interiors of their chimneys, but several have reported that the lining was in good condition. One correspondent states that after three months' use the interior surface of the chimney is "smooth, without cracks," and that "the soot does not adhere to the surface, but falls to the bottom or is carried out by the draft." Since the fire-resisting quality of concrete increases very greatly with age, it is fair to assume that if the interior surface is sound at the end of the first two or three months it will not disintegrate after that time. Right in this connection Mr. E. L. Ransome reports a recent examination of the inner shell of a chimney built nearly ten years ago of a true concrete of cement, sand and broken stone, in which he found the concrete in the hottest part of the chimney opposite the flue perfectly sound and exceptionally hard.

Concrete then may be considered as satisfactory for a lining or an inner shell in ordinary cases, although when exceptionally high temperatures are expected, say above 750° Fahr., it is on the side of safety to employ firebrick.

Principles of Design.

Having taken up the causes which have made trouble in the past, it now remains to definitely outline the principles which must be followed in design and also to enumerate the details of construction which in view of this past experience are essential in reinforced concrete chimneys, and which will warrant the adoption of this material as the standard for chimney construction.

A brick chimney stands because of its weight, the outside diameter at the base being made so large that it cannot blow over. The stress which comes upon the brickwork is, therefore, essentially compression. A reinforced concrete chimney is of such small size at the base that it would topple over when the wind blew if it were not held by the steel. The wind pressure causes compression on one side of the chimney (the side opposite the wind) and tension or pull upon the side against which the wind is blowing. To take this pull steel is imbedded in the concrete, and when the concrete is properly laid, it bonds or adheres to the steel in such a way that they act together, just as they do in the bottom of a reinforced concrete floor.

The principles of design and allowable units for stress are discussed at length in the complete report, of which this is an abstract.

Construction.

However well the chimney may be designed, unless materials are of the best and properly put together and laid the chimney will be defective. In the complete report the rules for selecting materials and placing them are given in detail. The quality of the ingredients must be insured by thorough tests of the cement, the sand and the stone (if used). In the construction thorough mixing must be insisted upon, and of special importance is the use of sufficient water to produce a jelly-like "quaking" consistency when lightly rammed, so that the layers will bond together and the concrete will positively adhere to the steel.

SUMMARY of Essentials in Design and Construction (6)—"In closing, a recapitulation of the most essential requirements for reinforced concrete chimney design and construction may be made:

(1) Design the foundations according to the best engineering practice.

(2) Compute the dimensions and reinforcement in the chimney with conservative units of stress, providing a factor of safety in the concrete of not less than 4 or 5.

(3) Provide enough vertical steel to take all of the pull without exceeding 14,000 pounds, or at most, 16,000 pounds per square inch.

(4) Provide enough horizontal or circular steel to take the vertical shear (unless it does not exceed fifty pounds per square inch in the concrete) and to resist the tendency to expansion due to the interior heat.

(5) Distribute the horizontal steel by numerous small rods in preference to larger rods spaced farther apart.

(6) Specially reinforce sections where the thickness of the wall of the chimney is changed or which are liable to marked changes of temperature.

(7) Select first-class materials and thoroughly test them before and during the progress of the work.

(8) Mix the concrete thoroughly and provide enough water to produce a quaking concrete.

(9) Bond the layers of concrete together.

(10) Accurately place the steel.

(11) Place the concrete around the steel carefully, ramming it so thoroughly that it will slush against the steel and adhere at every point.

(12) Keep the forms rigid.

The fulfillment of these requirements will increase the cost of the structure, but if the recommendations are followed, there should be no difficulty in erecting concrete chimneys which will give thorough satisfaction and last forever.

"Hydraulic Properties of Re-ground Cement Mortar" was discussed by Henry S. Spackman of the Henry S. Spackman Engineering Company, Philadelphia, and R. W. Lesley of Philadelphia.

The attendance at the various sessions was as follows:

THE ATTENDANCE.

Alma Cement Company—Mr. Hoover.
Alpena Portland Cement Company—Herman Fesser.
Alpha Portland Cement Company—A. F. Gerstell.
Alsen's American Portland Cement Works—Max Cappus, W. P. Corbett, Angus Sinclair.
American Cement Company of New Jersey—R. W. Lesley, R. B. Griffith, C. M. Camm, Wallace King, Jr.
Bath Portland Cement Company—B. F. Stradley, F. B. Franks, F. M. Hoover.
Buckhorn Portland Cement Company—William W. Hearn, Abraham C. Mott, Charles M. Mott.
Bonneville Portland Cement Company—George T. Burridge.
Castalia Portland Cement Company—Charles L. Johnson, George W. Hackett.
Catskill Cement Company—J. W. Kittrell.
Chicago Portland Cement Company—Norman D. Fraser, J. U. C. McDaniel.
Coplay Cement Manufacturing Company—W. H. Harding, Samuel Y. Heebner, H. Hartzell, C. J. Framley, J. C. Detweiler.
Dexter Portland Cement Company—John A. Miller, Joseph Brobston, C. W. Jones, Conrad Miller.
Diamond Portland Cement Company—Lyman A. Reed.
Edison Portland Cement Company—W. S. Mallory, E. Meyer.
Glens Falls Portland Cement Company—George F. Bayle and W. L. Douglas.
Helderberg Cement Company—T. H. Dumary, F. W. Kelley, C. H. Ramsey.
Hudson Portland Cement Company—E. Bravender, Mr. Lundg.
William G. Hartranft Cement Company—W. H. Ford, Washington Harder.
Louisville Cement Company—Mr. Houston.
Iola Portland Cement Company—E. R. Stapleton.
Kansas Portland Cement Company—L. L. Northrup, B. Allison.
Kosmos Portland Cement Company—Samuel Horner, Jr., Charles Horner, C. M. Dugan.
Lawrence Cement Company of Pennsylvania—E. R. Ackerman, T. B. Osborne, L. V. Clark, Mr. Johnson.
Lehigh Portland Cement Company—E. M. Young, George C. Sykes, P. A. Jandernal.
Thomas Millen Company—Deaune Millen, William H. Wiltse.
Nazareth Cement Company—M. J. Warner, Charles Warner, Charles Rye, P. H. Hampson, A. W. Paige.
Newaygo Portland Cement Company—D. McCool.
Omega Portland Cement Company—Jerry Kendall.
Peerless Portland Cement Company—J. R. Patterson, H. F. Treadway.
Penn-Allen Portland Cement Company—W. R. Yeager, W. E. Erdell, S. C. K. Stradley.
Pennsylvania Cement Company—William N. Beach, Robert E. Bonner.
Phoenix Cement Company—William Turner, H. Fetter.
Sandusky Portland Cement Company—P. B. Berry.
St. Louis Portland Cement Company—H. Struckman.
Speed, J. B., & Co.—F. M. Sackett.
United States Cement Company—C. M. Hoover.
Virginia Portland Cement Company—W. R. Warren, D. E. Rianhard.
Vulcanite Portland Cement Company—John B. Lober, W. D. Lober, Albert Moyer, W. R. Dunn, —— Barr.

Western Portland Cement Company—George S. Bartlett.
Whitehall Portland Cement Company—T. M. Righter, Howard B. Green, W. C. Kent.
Wolverine Portland Cement Company—L. M. Wing, Charles E. Wood.

NOTES OF THE MEETING.

George W. Parke of V. H. Parke, Sons & Co., Decatur, Ill., attended the meeting.

J. W. Ballard of the J. W. Ballard Company of Binghamton, N. Y., was also an interested visitor.

H. D. Haight, who represents the Thomas Prosser & Sons Company, agents for the Krupp Mill, was extending the glad hand as usual.

What meeting is complete without genial Kimball of Kent Mill fame? He was there, and on his home grounds, too.

L. M. Sturtevant of the Sturtevant Mill Company, Boston, Mass., was mingling with the crowd and exchanging handshakes.

H. G. Kimball of the Kent Mill Company was also on hand and a center of attraction. As a raconteur Mr. Kimball is in a class by himself.

J. Benton Porter of the General Electric Company, Philadelphia, was right at home with his many acquaintances.

Messrs. Durnell and Lyster, of the Lyster Supply Company of Philadelphia were also noticed among the many visitors.

Charles H. Claiborne, representing the Union Mining Company, proprietors of the Mount Savage Fire Brick Works, was also there.

Andrew P. Hachtmann of the Lehigh Car Wheel and Axle Works and H. G. Barnhurst and Mr. Fuller of the Fuller Engineering Company were also present.

The Lehigh Car Wheel and Axle Works, Catasauqua, Pa., was represented in full force by J. W. Fuller, Jr., J. S. Elverson and Messrs. Hall, Barnhurst and Weaver.

The Cleveland-Akron Bag Company was represented by G. E. Anthony and William Whaley. They presented to each of the delegates a handsome leather memorandum pad.

The Huron Cement Company's plant at Alpena is practically completed, and they expect to be manufacturing cement in the spring. This plant will have a capacity of 3,000 barrels per day.

Albert Moyer came near missing the banquet because his trousers were mislaid. He finally sent out and purchased a pair and arrived in time, although he confessed that it was a somewhat trying experience.

George S. Emerick and C. Victor Emerick of Nazareth, Pa., were both present. George Emerick gets more real enjoyment out of a cement meeting than he does out of any other kind of a gathering. He has many friends in the business.

The Williams Patent Crusher and Pulverizer Company of Chicago was represented by M. J. Williams of Chicago, R. F. Williams of St. Louis, and Walker Bowman, their Eastern representative. They presented to each of the delegates a very handsome letter opener.

Amos Kendall, known to his friends as "Jerry," has now become known as the "Ice Man." He sang a touching ballad called "Bringing in the Ice," which made a big hit with the boys, few of whom were aware beforehand that so much could be accomplished with such a cold subject.

The Edison Portland Cement Company have opened an office at Savannah, Ga., Rooms 908 and 909 National Bank Building, with George F. Balmer in charge as Southern representative. As soon as necessary arrangements can be completed they will carry a stock at the various seaports, which will enable them to make prompt deliveries.

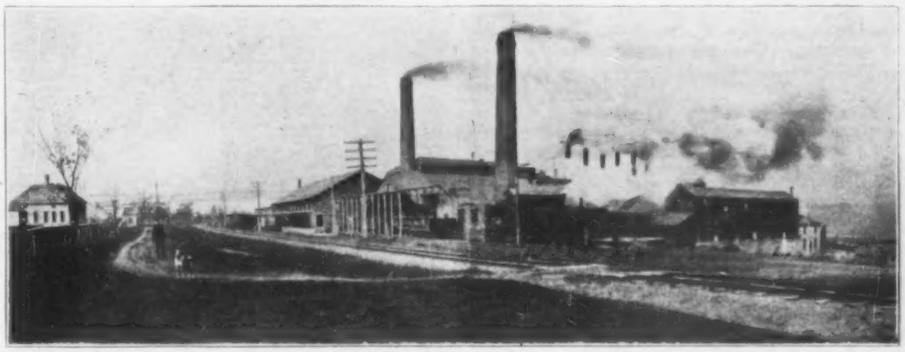
Frank W. Douglas of the Glens Falls Portland Cement Company had charge of the vocal end of the banquet. He had printed in a neat booklet a great many of the popular choruses. Mr. Douglas has a stentorian voice and generally leads. The boys learned the choruses so well that they did not stop singing until they went to bed.

The entire membership visited the exhibit of the Concrete Association of America at the Brunswick Building on Wednesday afternoon. Many of the exhibits are already in place, and the exhibition is calculated to prove of great value in a practical way, since the character of the exhibits covers the entire cement industry from the process of manufacture to the finished product.

Herman Besser of Alpena, Mich., who is president of the Alpena Portland Cement Company and the Besser Manufacturing Company, was in attendance. He said that he had been having remarkable success in placing his drain-tile machines. This is one of the simplest propositions on the market today and has given entire satisfaction. It is easy to operate and has no complicated mechanism to get out of order. He has placed twenty-two of these machines during the past few months. He has recently perfected a brick and veneer block machine, for which he makes the astounding claim that one man can make 15,000 cement bricks in a day. Patents have been applied for and the machine will be placed on the market in a short while. It has an interchangeable arrangement, whereby veneer blocks can be made with almost equal facility. One man recently accomplished the feat of making 2,000 veneer blocks with one of these machines in a day. His concrete mixer, which is one of the most unique and original machines of its kind ever manufactured, has been perfected and the patents have been applied for and allowed. The grinder which Mr. Besser patented, and which is at present in use in his own cement plant, is giving great satisfaction and will shortly be placed on the market. He has also perfected a wire separator to be used in connection with the grinder. He says that the Alpena Portland Cement Company has had a prosperous year, and is now closed down for repairs.

Wolverine Portland Cement Company.

One of the best-known and most progressive of the Portland cement concerns in Michigan is the Wolverine Portland Cement Company, with headquarters at Coldwater, Mich. This is a $1,000,000 corporation and is the successor of the Coldwater Portland Cement Company, organized early in 1898 with a capital of $300,000, and the Michigan Portland Cement Company, organized in June, 1898, with an authorized capitalization of $2,500,000. The company operates two plants, one at Quincy, Mich., and a second at Coldwater, Mich., with a total output of 3,000 barrels a day.



COLDWATER PLANT OF THE WOLVERINE CEMENT COMPANY, COLDWATER, MICH.

The raw materials, marl, clay and shale are in close proximity to the respective plants in inexhaustible supply. The process of manufacture is that known as the wet process, the clay and marl being mixed in pug mills and ground in tube mills and the shale being ground in dry pans, the resultant "composition" being introduced into the rotary kilns, which are of the Bonnet type, in the regular manner, which is now quite familiar to all those having to do with the use of Portland cement. Griffin mills are used for the pulverization of the coal, with which the composition is burned to a clinker, and the same grinding machinery is used for the grinding of material into finished Portland cement.

The company uses two brands under which to market their unexcelled product, the "Eclipse" and the "Wolverine," though in late years the latter brand has been used almost exclusively as a trade mark with eminent success in work of all descriptions in the Central Western States.

The officers of the company are: President and general manager, Lucius M. Wing; vice-president, Frank M. Rudd; secretary and treasurer, Edward R. Root. The general sales offices are located in the Chamber of Commerce Building, Chicago, with Mr. Charles E. Wood, general sales manager, in charge.

The Mobile Portland Cement Company has been incorporated at Portland, Me., with a capital stock (nothing paid in) of $5,250,000.

The Chicago Portland Cement Company, Stock Exchange Building, Chicago, has increased its capital stock from $600,000 to $1,000,000.

The Edison Portland Cement Company, owing to the increased demand for its cement in the South, has opened an office in the National Bank Building, Savannah, Ga.

Duane Millen of Thomas Millen & Sons, Wayland, N. Y., has shut down for the winter, but the construction on their new plant near Syracuse, N. Y., progresses rapidly.

The American Cement Company of New Jersey has declared a semi-annual dividend of 3 per cent on the capital stock of the company, payable January 23, 1908.

As mentioned in our last issue, the United States Government is about to advertise for bids on 4,500,000 barrels of Portland cement, to be shipped in the form of clinker to the Panama Canal.

Dunbar, Pa., is to have a $500,000 cement plant, to be erected by the Pittsburg Cement Corporation, of which Alexander Gilmore is president, J. B. Johnson secretary, and Al Klouse treasurer.

January 1 is the date set for starting the new plant of the Lakefield Portland Cement Company at Point aux Trembles, Montreal, with a 2,000-barrel daily capacity, to be increased when the demand requires 3,000 barrels a day.

"Security" is the brand of Portland cement that will be produced and is also the name given the passenger and freight station at the plant of the Maryland Portland Cement Company on the Western Maryland Railroad, near Hagerstown, Md.

The Union Portland Cement Company at Devil's Slide, Utah, have taken advantage of the general lull to rehaul their plant for next season. Shipments are being regularly made, and the company has orders as far ahead as February next.

The plant of the Universal Portland Cement Company, at Universal, near Homestead, Pa., is rapidly approaching completion, and the output of this mammoth plant will be quite a factor in the cement market early in 1908.

Senator C. T. Caldwell of Parkersburg, W. Va., has just been elected president of the National Cement Company, 1 Wall street, New York City. This company was recently organized with a capital of $2,000,000 and will erect a large cement plant at Carpenterville, N. J., in the immediate vicinity of the Edison, Alpha and Vulcanite Portland cement plants.

The work of construction has progressed steadily on the plant of the Crescent Portland Cement Company, at Wampum, Pa. W. J. Prentice, one of the pioneer manufacturers of Portland cement in this country, is the moving spirit in this large enterprise, and the company has just purchased the property of the Wampum Limestone Company, which will add materially to its already large holdings of raw material.

At the annual meeting of the Bath Portland Cement Company, held at Allentown, Pa., the following officers were elected to serve for the ensuing year: President, George Miller, Pittsburg; vice-president, Charles N. Miller, Pittsburg; secretary, B. F. Stradley, New York City; treasurer, Samuel Clark, Newark, N. J., general superintendent, F. B. Franks, Bath, Pa.; assistant superintendent, James H. Gish, Bath, Pa.

The little lull in the cement market has had its effect on Col. Harry Trexler, president of the Lehigh Portland Cement Company, Allentown, Pa. The Colonel was hunting bear and deer in Clinton County, Colo., last month. Having shot a pair of cubs, he was attacked by the mother bear, and though his clothing was torn into shreds, he finally managed, with the assistance of George K. Mosser, to render her Amazonian bearship *hors du combat* and returned to the Lehigh Valley with three bears as a trophy of his strenuosity.

Plaster.

Growing Interest in Organization.

The general request sent out through the columns of ROCK PRODUCTS, in the last issue, suggesting that plastering contractors communicate with Secretary John Niebuhr, 74 West One Hundred and Twenty-Sixth Street, with a view to organizing local associations in various parts of the country, has met with pronounced approval, and the results are most gratifying. Employing plasterers everywhere are pleased to know that this organization is so well established in the minds of all interested, and many have expressed their desire to see similar associations formed in their localities. Plastering contractors who wish to obtain the information necessary to enter this organization should communicate with the secretary, and he will forward literature and full particulars.

Employing Plasterers Banqueted.

NEW YORK, Dec. 18.—The third annual banquet and ball of the International Employing Plasterers' Association was held Monday night, December 16, at the Harlem Casino. About 400 master plasterers with their wives, daughters and sweethearts were present, as well as a number of building material manufacturers and dealers. It was one of the most successful affairs which the association has given and was heartily enjoyed. The large ball-room was tastefully decorated for the occasion and the dancing was indulged in by old and young alike. About 11 o'clock a grand march was formed and the guests repaired to the immense banquet hall, where the following menu was served:

Blue Point Oysters on Half Shell.
Consomme Royal a la Printaniere.
Celery. Queen Olives. Gherkins.
Fried Filet de Sole, Sauce Tartare.
Sweetbreads a la Newburgh, en caserolette.
Tenderloin of Beef a la Bearnaise.
French Peas. Potatoes Parisien.
Roman Punch in Cases.
Roast Philadelphia Capon.
Lettuce Mayonnaise.
French Ice Cream in Fancy Forms.
Assorted Cakes in Forms, Mottoes.
Fruit. Fromage.
Cafe Noir.

Several kinds of wine and champagne were served during the course of the dinner, and an orchestra of twenty pieces rendered a choice program.

At the conclusion of the program the toastmaster, James J. Babcock, arose and made the address of the evening, in which he feelingly referred to their worthy president, Thomas J. Mannion, as the Moses of the plaster industry, who had led the employing plasterers out of their troubles. He said that Mr. Mannion went out into the highways and byways and gathered the master plasterers together, until now they number ninety-five strong and are accomplishing more and better work than ever before in the history of the organization. He said that, looking back over the brief three years of the association's existence and realizing what they have done in the way of straightening out difficulties and raising the plane of the business, he felt proud of their achievements. He said they had established a mutual respect between the employer and employee among other things. He then introduced President Mannion as Moses, and that gentleman arose amid deafening applause. Mr. Mannion has not been well lately and only made a short address. F. C. Lamonte was next introduced and made an address, first in English and then in Italian. A storm of applause followed. William H. Caldwell and others also spoke, after which the entire assemblage repaired to the ball-room, where the festivities were continued until the wee sma' hours of the morning.

The International Employing Plasterers' Association have increased their membership during the past month, having enrolled 20 new members during that period. The present membership is 96, with several on the waiting list.

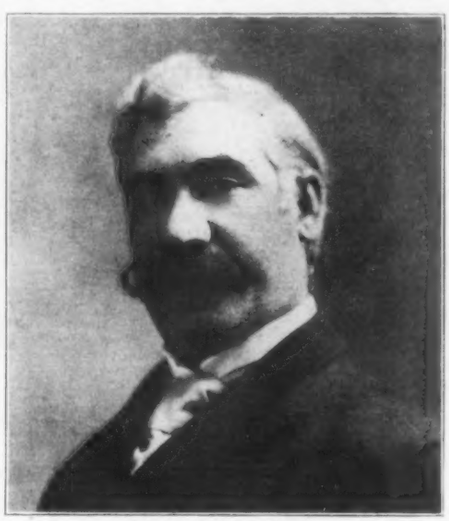
John F. Niebuhr, the business agent, was presented with a handsome watch fob, consisting of a gold lion's head set with diamonds, as an appreciation of the good work he is doing for the association. The committee of arrangements at the ball was composed of the following members: F. C. Lamonte, chairman; John Waters, secretary; W. H. Caldwell, Jr., Frank S. Phelen, J. H. Babcock. The floor committee was composed of: F. C. Lamonte, chairman; Peter Castro, W. H. Caldwell, Thos. Windsor, and Peter Grassi. J. J. Slavin was the floor manager and Benj. Carr, Jr., and Frank Maimo were his assistants.

New Plaster Factory in Colorado.

FLORENCE, COL., Dec. 15.—Dr. G. D. Cummings, who is heavily interested in the plaster factory at Ruedi, near Glenwood Springs, reports that the factory has started and that a fine grade of plaster is being manufactured from the gypsum rock, of which there is practically an inexhaustible bed close to the new works. The factory cost over $100,000.

A Progressive Gotham Contractor.

New York, Dec. 17.—F. C. Lamonte, whose picture we present in this issue, is one of the best known plastering contractors in New York. He came to this country from Italy in 1890, and began work as a journeyman. In about a year he had become a plastering contractor and since then his rise has been rapid. Soon after he came over he became a citizen of this country and interested himself in politics. He is a member of several Democratic clubs and wields an influence in his district, especially with his own people. To give some idea of the magnitude of Mr. Lamonte's operations it may be said that during the years 1905 and 1906 he successfully carried out over $300,000 worth of work and had employed at times as many as 175 men. He has done the work on many notable buildings and stands high with the



F. C. LAMONTE, NEW YORK.
Chairman Entertainment Committee of the International Employing Plasterers' Association.

architects and builders, as he is known to be both reliable and trustworthy. He has taken considerable interest in the International Employing Plasterers' Association and has been one of the powerful influences ever since its inception. He was the chairman of the arrangement committee at the recent banquet and ball, and acquitted himself with glory.

Southwestern Company Organized.

OKEEN, TEX., Dec. 2.—The Southwestern Cement Plaster Company has been incorporated with $350,000 capital stock. The incorporators are E. E. Cressler, Charles Glyckherr and J. C. Fisher.

New Shovel Arrives.

GRAND RAPIDS, MICH., Dec. 1.—The new shovel for the Plaster Company at Grandville has been delivered. The cost is about $10,000.

Gypsum Company Plans Work.

WATERLOO, IOWA, Dec. 1.—The Great Southern Gypsum Company, owned and officered by some of Waterloo's best known business men, is making active preparations for the beginning of work on its extensive holdings in the new State of Oklahoma. The company owns 800 acres of proven gypsum deposits varying in depth from 15 to 30 feet, with an average of about 23 feet, or a total of over 50,000,000 tons. The directors of the company are F. L. McCune, president, and C. W. Chapman, William Keagy, Robert S. McCune and E. L. Hotchkiss, the last-named of Watonga, Okla.

New Plaster Mills Completed.

The Stinson-Reeb Builders' Supply Company, Ltd., 188 William Street, Montreal, who have for some time been handling the products of the Imperial Plaster Company of Toronto, found the demand for these well-known and reliable wall plasters so heavy that they have just completed the erection of a thoroughly equipped plaster mill. It is conveniently located between the Canal Bank and St. Ambroise Street, with both Grand Trunk and Canadian Pacific Railway shipping facilities. By this arrangement the raw materials can be brought in by both rail and water, and shipments of goods made without delay.

"Imperial Plaster" (hair mortar and wood fiber), as manufactured under patent rights of the Imperial Plaster Company of Toronto, will be the product. Besides the above, it is the intention of this progressive firm to manufacture a special "finish" to be used in connection with their plasters.

The company give prompt and careful attention to local orders as well as whole or broken carload lots for outside delivery.

Rockford Concern Makes Improvements.

In a recent interview with W. W. Sawyer of the Rockford Wall Plaster Company of Rockford, Ill., a representative of ROCK PRODUCTS gleaned many particulars of their new plant's operations and what had been accomplished by recent changes and improvements. Speaking of these improvements Mr. Sawyer said: "We now have one of the best and most economically equipped plaster plants in the country. During the year we have installed electric power, each machine being operated by its own individual motor. A great deal of time is saved by this arrangement, and it also adds to the convenience in operating. The expense has been less than the amount paid out for coal in running our steam plant under the old methods."

Speaking of their business the past year, Mr. Sawyer further said: "The sale of our Rockford wall plaster has gained extensively this last year; in fact, it has gradually increased every year. The territory over which it is now used is very large, and we are striving to extend into other fields. We are so well equipped that we can do this without any effort and satisfy all. Our new brick factory building is large and commodious and enables us to turn out more product and in less time."

Plaster Company Organizes.

LIMA, O., Dec. 1.—The Lima Plaster Company has been incorporated for $10,000. The incorporators are James Wells, A. Wells, William Elsasser, William Muors and James Undine.

Gypsum Concern Incorporated.

ROCHESTER, N. Y., Dec. 1.—The Victor Gypsum Company has taken out papers of incorporation to mine and market gypsum rock and building materials. Capital stock, $200,000. The incorporators are Charles L. Tuttle, Allison Tuttle, Joseph W. Hart, Rochester, N. Y.; Howard G. Fisher and L. Steiner, Akron, N. Y.

U. S. Gypsum Adds Holdings.

PORT CLINTON, O., Dec. 6.—Another deal has been consummated by which the United States Gypsum Company adds 167 acres to its already large holdings, which now embrace over 400 acres. The price paid was $35,000.

Plant Resumes Work.

BATAVIA, N. Y., Dec. 6.—Operations have been resumed with a full working force in the plant of the Wheatland Land and Plaster Company at Caledonia, which was recently shut down.

Scranton Concern Incorporates.

SCRANTON, PA., Dec. 12.—The Scranton Plaster and Supply Company was chartered this morning with $5,000 capital. There was a protest against the name by another plaster company.

Plaster Company Plans Additions.

SYRACUSE, N. Y., Dec. 14.—The Paragon Plaster Company is to spend $4,500 in a building at its plant in West Fayette Street.

Increases Capital Stock.

CLEVELAND, O., Dec. 17.—The Consumers' Gypsum Company of this city has increased its capital stock from $60,000 to $75,000.

Syracuse to Have Another Plaster Mill.

SYRACUSE, N. Y., Dec. 14.—The Syracuse Wall Plaster Company of this city incorporated recently; capital stock listed at $25,000.

New Gypsum Plant in Operation.

The Niagara Gypsum Company, with main office at 597 Michigan Street, Buffalo, N. Y., have just completed their large mill at Oakfield, N. Y. This company was incorporated October 11, 1906, with a capital stock of $150,000. The officers of the company are: John A. Kling, Cleveland, Ohio, president; W. K. Squier, Syracuse, N. Y., vice-president; M. A. Reeb, Buffalo, N. Y., secretary and treasurer. Besides the officers some of the principal stockholders are: James H. McCrady, Pittsburg, Pa.; the Paragon Plaster & Supply Company, Scranton, Pa., represented by Mr. E. L. Merriman; Mr. C. H. Classen, Baltimore, Md., senior member of the firm of C. H. Classen & Son; the Paragon Plaster Company, Syracuse, N. Y.; Granitine Wall Plaster Company, Lebanon, Pa.; George L. Kingston, Buffalo, N. Y.; F. A. Jones, Oakfield, N. Y.

The mines and mill of the company are located at Oakfield, N. Y., on the main line of the West Shore Railroad. The company have about 500 acres of the famous Oakfield gypsum which they are developing. The land has been carefully tested with core drills and there was found enough fine gypsum rock that could be advantageously worked to run a mill for over fifty years.

In the winter of 1906 the Niagara Gypsum Company sank their "A" mine, which has been in full operation for months, and they now have many thousands of tons of high-grade gypsum rock above ground, besides a large quantity stored in the rock shed at the mill, available for any contingency. The second mine has also been sunk, which will materially increase their present rock supply. The company have been especially fortunate in being able to obtain dry mines.

Last April ground was broken for a large mill on land owned by the company, fronting on the West Shore Railroad. This mill is now completed and in operation and the buildings and equipment are models of their kind.

The Niagara Gypsum Company have not spared money to equip this plant. Large, steel-framed, fireproof buildings have been erected, and they have installed the most improved up-to-date machinery in every department.

The arrangement at the mines is such that the rock is handled in an economical manner and transported to the mill on especially constructed cars over a standard-gauge trolley line. A large electric motor car is employed in handling these cars, which pass on a 100-ton track scale and then to a point where they are dumped into a large crusher, and here commences the process of manufacture.

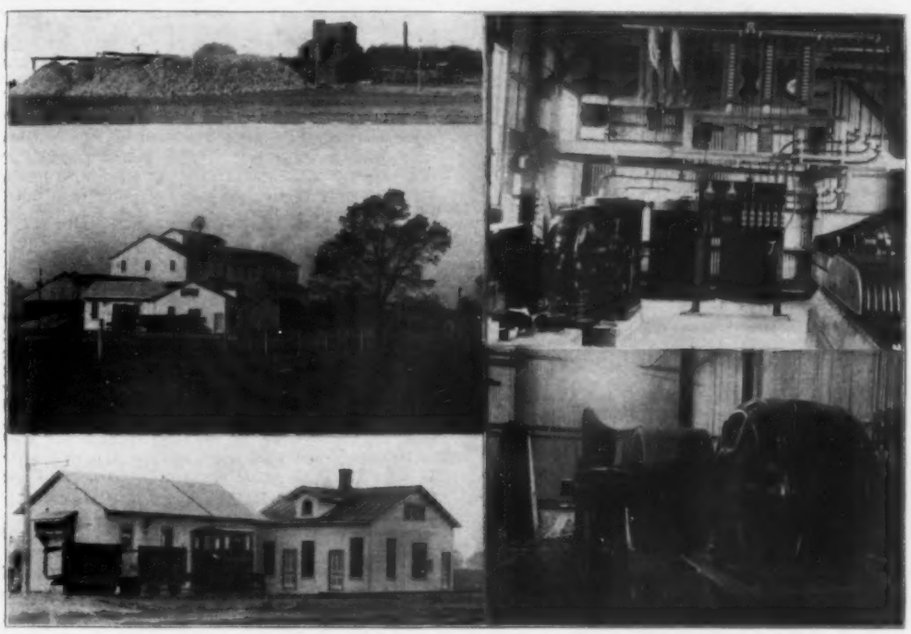
The manipulation of the rock is by machines that have been proven best adapted for their special work, and the process is what good practice has demonstrated to be the best known. The aim of the company has been to produce a superior product, and the results show that their plans were well laid and carefully developed.

As the calcined plaster comes from the bolter it is conveyed to large, especially constructed storage bins that have ample capacity for a mill of this kind, and the bagging arrangements, as all other appliances in this plant, are models and of the best form of construction known.

In the mill the motors and shafting have been so located and arranged that the plant is very flexible, and any department can be closed without interfering with the operation of the rest of the mill. Machine and blacksmith shops have been constructed and are equipped with electric motors and such improved machinery and tools as will enable the company to quickly care for their repair work.

The superintendent, F. A. Jones, M.E., was the engineer in charge who designed and built the plant, and he is now in charge of operations and is thoroughly conversant with every phase of the work.

If ever a plant started under favorable conditions it is the Niagara Gypsum Company. The personality of the stockholders, directors and officers is such that the trade will recognize that the combination is strong financially, and it is closely allied with the American Gypsum Company, whose plant is located at Port Clinton, Ohio.



THE NIAGARA GYPSUM COMPANY, OAKFIELD, N. Y.
1. Storage of Raw Material. 2. Near View of Plant. 3. Office. 4. The Great Power Plant. 5. Electric Motors, 3,000-horsepower.

In Southern California.

LOS ANGELES, CAL., Dec. 10.—A recent addition to the manufacturing industries of Los Angeles is the Wood Fiber Plaster Company, whose factory is situated at East Ninth Street and the Santa Fe Railroad. From D. Strauss, the mill superintendent, it was learned that the gypsum rock used comes from Albuquerque, N. M. The rock is delivered to the crusher (made by the J. B. Ehrsam & Son Manufacturing Company, Enterprise, Kan.), and from that it is elevated to another crusher on the second floor (a Dodge rock-breaker from San Francisco), and then carried, as fine-ground material, by a conveyor to the two calcining kettles, which are eight feet in diameter and six feet deep. These kettles are equipped with a revolving agitator and the process affects the casting off of the water of crystallization and a chemical change or reaction, besides producing absolute dryness. The charge is then dumped into the hot pit, after which it is conveyed to the mixing or storage bin, being fed by the hopper over the mixer with the clay product and the wood fiber while being sacked in burlap sacks. The wood fiber is elevated by a blast fan from East Iron and Machine Company, Lima, O. Most of the machinery of the mill is from Ehrsam & Sons. The capacity is 100 tons. Power for the factory is supplied by a 200-horsepower Edison motor. In the shop were some handsome ornamental castings in plaster of paris work, which were to be shipped for the Melrose Hotel.

The offices of the company are at 355 Pacific Electric Building. F. R. Dunn, general manager of the company, has equipped himself for managing a plaster plant by a course in American and foreign technical schools. The company manufactures two grades of exterior wall plaster.

The deposit of the company is pure gypsum and makes, in connection with special ingredients, a hard and tough wall plaster when set. Among the large jobs on which their plaster is being used is the Hamberger Building and the Y. M. C. A. Building.

Though not as extensively used as in some other sections, hard wall plaster is steadily gaining ground in Southern California. One of the leading manufacturers is the Fire Pulp Plaster Company, William A. Bradshaw, manager. The factory and office are at 750 South Alameda Street. Their "Fire pulp plaster" is ready to apply when water is added. It is also used for sand finish and wainscoting jobs. The company also manufacture the Angeles cement plaster. Fire pulp and Angeles cement plaster work cool, spread freely and easily; hence need but slight pressure and spreading. The company has another and larger factory at Palmdale, Cal. Among the recent large jobs on which their product has been used are the I. W. Hellman and Security Buildings, the Los Angeles Building and the California Club.

In the Los Angeles territory there are in active operation five hard wall plaster companies, and another factory is nearing completion. One of the managers of these companies told the ROCK PRODUCTS representative that, as about 30 per cent of the inside work being done in this territory is hard walls, there is ample field for the output of all these factories.

The Los Angeles Elastic Pulp Plaster Company's plant, Huntington Park, is equipped with both steam and electric power and an Ehrsam mixer. The railroad facilities, both for receiving and shipping, are excellent; the tracks of the Santa Fe and Southern Pacific are near the plant. The city office of the company is at 900 South Broadway. J. C. Marquardt is the general manager.

The California Magnesite Company (Inc.), 409 Stimson Building, W. S. Withers, president, have been engaged in manufacturing wall plaster for some months, and while it has been made on a limited scale, as their factory is not yet fully equipped, yet a sufficient quantity has been sold and used to afford a reliable demonstration of the merits of the company's product. Mr. Withers says it was the result of more than two years of experiment and the process employed would not be made public. The deposit is located at Winchester, Riverside County, California, and the material is shipped to the factory at Los Angeles. In the Winchester district deposits of short-fiber asbestos and soapstone are also to be found. Their plaster material comes in powdered form, and water is employed to make it plastic. It can be furnished either quick or slow setting at about the same cost as hard wall plaster. It is very adhesive and does not require the use of furring. Samples taken from a recent job show the plaster to be firm and tough. This is the only company producing this style of wall plaster.

Though there are similar plants in the East and Middle West, the only prepared mortar concern in the far West is the Scientific Machine Mixed Mortar Company of 714 Fay Building, Los Angeles; Mr. Norton, secretary; George A. Bowman, manager. A visit to the works, corner of Porter Street and Santa Fe tracks, is very interesting. The process used by the company is protected by letters patent. Briefly stated, their invention comprehends an apparatus for mixing plaster and mortar in which lime is first thoroughly slaked in their slaking machine, so as to form a lime putty or paste, in which the lime-putty thereby produced is screened and strained so as to rid it of all unslaked or objectionable matter, and stored in vats in the ground (thereby removing all weight from the building) for a period of time—preferably ten to fourteen days—sufficient to insure its slow but thorough slaking and digestion. Finally becoming cold, it is mixed with sand and fiber, thereby producing a product which can conveniently be used both as mortar for laying brick or for plastering purposes. By use of this set of machines for handling, proportioning and mixing the ingredients of mortar a constant, uniform and superior product is economically obtained. Materials are shoveled from the car to a slide which reaches the hopper, from which a conveyer distributes each kind to its proper receptacle. The works are provided with different kinds of conveyors to facilitate handling of material in process of treatment. Among recent jobs on which the company's product has been used the following may be mentioned: Central Building, ten stories; Wright & Callender Building, ten stories; Bullock Building, seven stories; Alexander Hotel, seven stories; Jevne Building, six stories; Blackstone Building, Broadway; Central Department Store, Broadway; Security Building, ten stories.

For the Retailer

The National Builders' Supply Association

Meets Semi-Annually.

OFFICERS:

GORDON WILLIS, St. Louis, Mo. ..... President
CHAS. WARNER, Wilmington, Del. ..... Vice President
G. O. PERKINS, Des Moines, Iowa. ..... Vice President
H. H. HALLIDAY, Cairo, Ill. ..... Vice President
E. A. BRADSHAW, Indianapolis, Ind. ..... Vice President
OWEN TYLER, Louisville, Ky. ..... Vice President
JOHN J. KELLEY, Baltimore, Md. ..... Vice President
JAMES A. DAVIS, Boston, Mass. ..... Vice President
E. E. EVANS, Bay City, Mich. ..... Vice President
JOHN WHARRY, St. Paul, Minn. ..... Vice President
P. J. DAUERNHEIM, St. Louis, Mo. ..... Vice President
C. W. ENNIS, Morristown, N. J. ..... Vice President
J. J. MANDERY, Rochester, N. Y. ..... Vice President
G. H. GENGNAGEL, Dayton, Ohio. ..... Vice President
LUTHER KELLER, Scranton, Pa. ..... Vice President
B. L. GROVE, Washington, D. C. ..... Vice President
R. W. MARSHALL, Wheeling, W. Va. ..... Vice President
PETER FISHER, JR., Kenosha, Wis. ..... Vice President
C. J. WATERHOUSE, San Francisco, Cal. ..... Vice President
V. H. KREIGSHABER, Atlanta, Ga. ..... Vice President
J. R. McCORMACK, Greensboro, N. C. ..... Vice President
C. M. KELLY, Providence, R. I. ..... Vice President
J. C. LOVELACE, Memphis, Tenn. ..... Vice President
A. C. GOWER, Greenville, S. C. ..... Vice President
HARRY W. CLASSEN, Baltimore, Md. ..... Treasurer
HARRY S. WEST, Toledo, Ohio. ..... Secretary

Official Organ, ROCK PRODUCTS.

Important Meetings in January.

The meetings in which building supply people are interested to be held during the month of January are as follows:

The Northwestern Lumber Dealers' Association, Minneapolis, January 14, 15, 16.

The Indiana Retail Lumber Dealers' Association, Indianapolis, January 15 and 16.

The Colorado and Wyoming Lumber Dealers' Association, Denver, January 15, 16, 17.

The Union Association of Lumber Dealers of Ohio, Columbus, January 21, 22.

The Nebraska Lumber Dealers' Association, Omaha, January 22, 23.

The Ohio Builders' Supply Association, Columbus, January 23, 24.

The Southwestern Lumber Dealers' Association, Kansas City, January 28, 29.

National Builders' Supply Association.

The National Builders' Supply Association will hold their ninth annual meeting February 4 and 5, 1908, at the Auditorium Hotel, Chicago, as has been mentioned before.

There will be a carefully prepared program, and no doubt it will be the most successful meeting the association has ever held. Assurances have been received from all quarters that the attendance will be large.

The gavel drops at 10 o'clock on the morning of the 4th, when President Willis, in his inimitable manner, will start things. The evening will probably be spent in attendance at the theater, but of course the spacious lobbies of the Auditorium will be filled with builders' supply men and those who sell them goods.

On the evening of the 5th a banquet will be held, and some of the most aggressive manufacturers and dealers are now preparing addresses for the occasion.

This affair will not be altogether formal, as members can attend with their pants in their boots if they choose. In other words, it will be a business men's dinner rather than a clawhammer-coat affair, strictly speaking. Of course, if any of you fellows have your tuxedos in condition or dress clothes on tap bring them along. It won't do any harm, but it is not to be a dress affair.

No doubt the big Auditorium will be crowded, for this is going to be a great meeting. The local dealers in all sections should take an interest in the National body. It is this organization which is doing the greatest amount of good and can interest the manufacturers, because it is in touch with them. Of course, every State should have its local organization and send a delegate, or, better still, come out en masse to the National meeting. It is much easier for a large body to work out problems for the dealer, and the coöperation of all concerned is of vital importance to the industry.

Ohio Builders' Supply Association.

The next annual meeting of this association will be held January 23 and 24 at the Great Southern hotel, Columbus, O. President W. A. Fay and Secretary D. K. Thompson have arranged a programme that will interest every dealer in the State. The vast amount of good done by the organization should enlist every man's support, and this meeting should be well attended.

Visitors at the Big Chicago Cement Show.

W. N. Fisher of the Fisher Lime and Cement Co. was on hand the first day and took in the whole show.

A. W. Eisenmeyer, of Granite City, Del., was there and said: "It has been a very prosperous year with a sudden termination to it."

Frank S. Durham of the W. J. Durham Lumber Company, Wautoma, Wis., didn't miss a thing.

Charles Glore, the popular building material man at Centralia, Ill., spent a few days absorbing cement information.

J. B. and Edw. Whitnall, of the Pennsylvania Coal and Supply Company, Milwaukee, Wis., each spent a day at the show.

A. E. Bradshaw of the Indianapolis Mortar and Fuel Company, Indianapolis, was on hand a few days. He says business in Indianapolis for 1907 was great.

A. B. Meyer, of A. B. Meyer & Co., Indianapolis, Ind., thought no dealer should pass up the show. So he was on hand with the crowd.

Charles Weiler of the Wisconsin Lime and Cement Company, Milwaukee, mixed with the cement boys.

O. B. Fuller lumber dealer at Joliet, Ill., was around gathering literature. He is thinking of adding a line of building materials.

Peter Degnan, president of the Toledo Builders' Supply Company, was a very enthusiastic visitor and was much pleased with the exhibition.

Messrs. Torkilson and Henry of the Noyes Coal Company, building material dealers, Evanston, Ill., came in to see the sights.

The Next Exposition.

The National Lumber and Building Material Exposition, which is to be the first of its kind, will be held in Chicago at the Casino February 10 to 15, in conjunction with the Illinois Lumber Dealers' Association and the Illinois Masons' Supply Association. The exposition is intended to be of great educational value to dealers and others who will be in attendence at the convention. There will be a number of exhibitors both in lumber and building materials, and nearly all the available space has been contracted for. Everitt W. Hogle is director of the exposition, and he reports that both dealers and manufacturers are taking a lively interest in the show.

Wants Catalogues.

The purchasing agent of the Crescent Engineering Company, Newport, Tenn., wants catalogues and prices on building materials.

Dan McCurdy of Pittsburg (of building material and sewer pipe fame) is one of the handsomest men in that district. He don't believe it, but we know it.

Daniel and John Baker of Buckleystown, Va., accompanied by the senior Baker of the firm, were in Pittsburg the other day. They are perhaps the largest operators in the South in building material lines. Their crushed stone and lime is sold largely in Southern Pennsylvania, Virginia and West Virginia.

Good Business at Lexington.

LEXINGTON, KY., Oct. 30.—Buford A. Graves reports that business is very good in the building-material line. His warehouse is on the C. & O. Railway, so shipments are easily handled. He is the agent for the Alpha Portland Cement Company, and handles Speed's limes. G. W. Land, another building material dealer at this place, has had a very good business this year. He states that business operations during the past few weeks have been somewhat off. He handles sewer pipe, plaster, Louisville limes and Old Dominion Portland cement. His warehouse is on the C. & O. Railway.

Mattoon, Ill.

The Gabbert Lumber Company, whose office, warehouse and yard are situated at 1801 Charleston Avenue, handle Alpha Portland cement (paper packages), Mitchell white lime (in wood) from Mitchell, Ind., Elyria cement plaster, wood pulp, and Acme cement plaster. They also carry a full line of sewer pipe. Mr. Gabbert said he had handled some hydrated lime and that it was all right. The concern was formerly known as the Moore-Gabbert Lumber Company.

Mattoon, Ill.

Under different styles, the Andrews Bros. Lumber Company are interested in ten lumber yards in various parts of the State. The business was founded thirty-five years ago by the father of the members of the company, who died at his old home at Lincoln last summer. Talking with J. D. Andrews, a ROCK PRODUCTS representative learned that they handle Lehigh Portland cement (both in paper and in jute), Eichel white lime (in barrels) from Evansville, Ind. In hydrated lime they are doing some business, having sold thus far a couple of carloads. For hard plaster they deal in Agatite and Elyria wood pulp. Speaking of lime mortar, to show how little use was being made of it, Mr. Andrews said he had not bought a bushel of hair in three years. Sewer pipe is carried in stock, East Alton, Chicago and McNutt comprising the principal sources of supply. At their Charleston yard, considerable Sackett plasterboard has been sold. The company have two yards at Mattoon, but recently lost by fire their sheds at the yard at Broadway and Nineteenth Street. It will shortly be rebuilt. Both yards are near the tracks of the I. C. and Big Four roads.

Booneville, Mo.

Though Booneville is the official headquarters of the C. J. Harris Lumber Company, the buying is done at Moberly, Mo. The company has been established twenty years and has yards also at Clifton City, New Franklin, Higbee, Hunterville and Louisiana. Talking with E. N. Wood, secretary and treasurer, who for the past five years has had charge of the Boonville office and yard, I learned that besides lumber and builders' hardware, they sell Sunflower (Iola) from the Kansas Portland Cement Company, Bear Creek (Hannibal) lime and Hannibal hydrated lime; Texas cement plaster from Texas Cement Plaster Company; Blackmer & Post and Dickey (Kansas City) sewer pipe. They also handle Mound City paints. The company have recently taken up the manufacture of concrete blocks, for which they employ the Miles machine. For surfacing they use Carthage stone saw screenings, which make a light-colored face.

The Booneville Pottery was first started in 1835. F. X. Blanck is now the proprietor, and, besides various articles of earthenware, manufactures (hand process) small sizes of sewer pipe, Albany slip glaze.

J. B. Thro has been engaged in the lumber business here since 1868. This fact I learned from observing a framed poster, yellow with age, announcing that he had opened a new lumber yard and solicited the patronage of Boonville citizens. Talking with Mr. Thro I learned that he handled Iola cement, local lime (Lohse & Miller) and Acme cement plaster, together with a full line of builders' hardware.

Warrensburg, Mo.

William Lowe has been engaged in the lumber business for forty years. This I learned from Mr. Witherspoon, who had charge of the office in Mr. Lowe's absence. The concern handles the Kansas Company's Portland cement, the works being at Gas, Kansas, postoffice address Iola; Ash Grove white lime and some Ash Grove hydrated lime; Acme cement plaster and Monarch (Watonga, Okla.). In

local plaster jobs, cement lime is used with lime putty for finish. Their principal business is lumber.

Another lumber dealer who has scored a long connection with this business is G. W. Hout, who began in 1880. Even then Mr. Hout had had several years' experience as a builder, which he found of much practical value. In addition he handles the Kansas Portland Cement Company's Sunflower brand, Ash Grove white lime, Ash Grove hydrated lime, Golden Seal (Southard, Okla.) plaster and Rubberoid roofing.

In using lime, sand and hard wall plaster, with lime putty for finish, is the general practice in this locality.

When a lumber dealer is making up an order to sort up his stock, not only does the traveling salesman have the floor, but it is not an occasion when one can get an opportunity for a social chat. This being the case when I called at the office of the Clark Lumber and Hardware Company, I was fain to get the foreman to do the honors, but cannot give his name on account of his modesty. I learned the company handled Iola Portland Cement Company's cement, Ash Grove white lime, Ash Grove hydrated lime, and Selenite plaster from Alva, Okla. The company has been established eight years and does a large and steadily increasing business. Mr. Clark has a brother in the same line of trade at Pleasant Hill, Mo.

As Will D. Gibson had sold the County Fair people a lot of lumber, he evidently thought he ought to set a good example for his brethren in the trade by closing his office and lumber yard at noon. Consequently I did not have as much of an opportunity to discuss builders' materials and the good of the trade with him as I would have liked, and as he has been in the business for over ten years, it is probable some words of wisdom would have fallen from his lips, though he vigorously claimed he couldn't enlighten the trade a particle. I found he handled Kansas Portland Cement Company's Sunflower brand, Ash Grove and Bear Creek lime, and Acme cement plaster, also Granitite roofing and paint.

Pleasant Hill, Mo.

Clark's lumber yard is superintended by George Fox, and besides lumber a full line of farm implements, builders' hardware, masons' supplies and paints is carried in stock. They handle the Iola Company's cement, Ash Grove white lime and Agatite cement plaster from the American Cement Plaster Company, Lawrence, Kan.

J. C. Jones & Son, whose principal yard and headquarters are at Lee's Summit, have in all five yards. The yard at Pleasant Hill is in charge of Claude Headen. They handle Western States (Independence, Kan.), Kansas Portland Cement Company's and Iola Portland Cement Company's cement, Ash Grove white lime, Pierce City, Mo., white lime and Acme cement plaster. Lime is locally mostly used as lime mortar, being mainly for brick work. Mr. Headen informed me he could buy hydrated lime at the same price as common lime in barrels. The hydrated is put up in patent paper sacks, forty pounds to the sack.

Independence, Mo.

The Moore-Eubank Fuel, Feed and Cement Company (Incorporated), as I learned in talking with Mr. Moore, handle Atlas and Kansas Portland Cement Company's cement, Colorado lime and Monarch cement plaster. Mr. Moore became quite interested in the subject of hydrated lime, for as he had experienced trouble from lime slaking he was half inclined to abandon carrying it in stock. He said that business was good in materials, and as for coal, he was having great difficulty in procuring supplies. The company's warehouses are situated on both the Missouri Pacific and Kansas Southern roads.

Edwardsville, Ill.

Orie T. Dunlap is a general contractor, his specialty being concrete work, which includes granitoid, sewer work and concrete blocks. Mr. Dunlap has recently built a fine residence for his own use of concrete blocks. There exists in the town a prejudice against the use of this material for residences which he finds it difficult to overcome, mainly from want of confidence in its durability and fear of trouble from the falling of plaster, through the penetration of moisture. He uses the Pettyjohn machine.

Belleville, Ill.

The Karr Supply Company, 127 West Main Street, carry a full line of builders' hardware and other supplies; also deal largely in sewer pipe, coping, flues, etc., which are purchased mainly of Evens & Howard, though part of their supplies are furnished by White Hall, Ill.

Fred K. Daab, of Fred Daab Company, whose office, warehouse and yard are situated near the Illinois Central station, said the building trade was dull, owing to the strike, which had lasted since the spring.

When I found that Mr. Daab laid in his season's supply of bulk lime (which he purchases of the Glencoe Lime and Cement Company) in the winter to the amount of 5,000 bushels, and that in summer he never had any trouble with lime slaking, I asked him to describe his lime house for the benefit of the readers of ROCK PRODUCTS. In reply he said it had a cement floor, was boxed on the inside, boarded boxing, tar paper and flooring, and built strong. The sides and bottom are the main feature. In this house, lime will, if need be, keep two years. He fills the house and has a bin to retail from. Asking him concerning his trade on lime, he said for interior work he had not sold fifty bushels this year, the demand being for hard plaster. In addition to his business in building materials and coal, Mr. Daab has done some work in concrete blocks, using a Pettyjohn machine, but he has had such difficulty in procuring suitable help that for the present he is not making any. Mr. Daab handles three brands of Portland cement—Lehigh, Bedford and Red Ring. He remarked that cement ought to be aged before it is put on the market—that freshly made cement is not fit to be used and will burst open both paper and cloth sacks. For white lime for finish he sells Ste. Genevieve. I found he was a strong advocate of hydrated lime—in fact, had urged the Ste. Genevieve people to install a hydrating plant. The Acme brand of cement plaster is popular with his customers. Mr. Daab said he handled cement in paper and cloth sacks (principally cloth), and in addition to Portland, sold some Louisville common. He carries in stock a full line of Evens & Howard's sewer pipe and sells St. Louis Vitrified Fire Brick Company's fire brick. Sand and gravel he buys of the Union Sand and Material Company.

Effingham, Ill.

Mr. Wildi, of the Wildi-Leddy Lumber Company, though a native of Switzerland, has lived at Effingham over twenty years, during fifteen of which he has been in the lumber business. Besides lumber, the company handle, he told me, Lehigh Portland cement in cloth and Marblehead white lime in wood, and had sold some of their hydrated lime, though this was only used for finish. They also deal in Acme cement plaster, McNutt's sewer pipe, A. A. Eberson & Co.'s paints and Little Wabash River sand. Much cement is being used at present in street improvements for gutters and curbing. These improvements will be continued another season on the same scale.

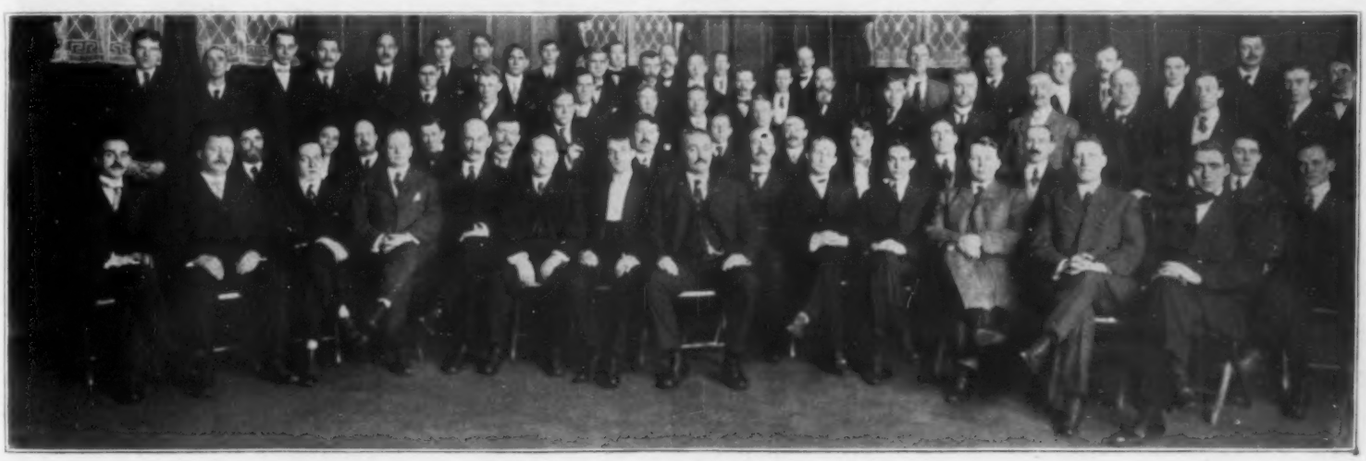
The yard and office of the Ewing Lumber Company are situated near the Illinois Central Railway. J. T. Ewing informed me that his brother and himself were the proprietors and that they had been established about five years. They handle Alpha Portland cement from Eastern Pennsylvania, in cloth. On my remarking that the cement manufacturers were likely pretty generally to adopt the Bates valve paper sack, he said they would be only too glad to do away with the nuisance of sending empty bags back. They sell Marblehead white lime, and some of the company's hydrated, but not much lime mortar is used. The demand is for cement plaster, and the brand they deal in is Acme.

The Pittsburg Builders' Supply Club.

During the last few years the building material men in large cities have found it desirable to meet once a year, and sometimes oftener, to discuss various phases of their business, and incidentally to get better acquainted and enjoy each other's confidence and good will. This was the excuse for the organization of the Pittsburg Builders' Supply Club, formed four or five years ago at Pittsburg. Their annual banquet comes off in December, and this year it was held at the German Clubhouse, Tuesday, December 10. The writer happened to be in Pittsburg the day following, and everybody was enthusiastic. The banquet was one of the best ever given by the club. After the feast the members adjourned to the auditorium of the clubhouse, and presents were given to President John Strauss and Secretary Grant Murray, who in turn made their stock speeches. As it is a common practice with this club to treat their officers well, and as President Strauss has held the job down for a number of years, he is particularly well equipped to make these addresses. Clark Porter is vice-president, and, with the foregoing officers, George Lang and George Hepenstall, makes up the executive committee. Mr. Hepenstall was also chairman of the entertainment committee, which provided a vaudeville performance, in which a number of the members took a hand. They tell us it was the warmest show ever put on, and those who know George Hepenstall say this must have been true. Eight soubrettes furnished entertainment and were enthusiastically applauded by the one hundred gentlemen in attendance. The picture herewith tells its own story.

George & Co. have been incorporated for $55,000. The incorporators are W. J. Gray, L. C. Waldo and Robert M. Hull.

The K. & K. Cement Company, Haverhill; cement of all kinds; capital, $1,000. President and treasurer, William A. Knipe; clerk, William L. Knipe, both of Haverhill.



THE PITTSBURG BUILDERS' SUPPLY CLUB.

Michigan's Big Supply House.

C. H. Little, founder of the C. H. Little Company, manufacturers and dealers in builders and pavers' supplies, Detroit, Mich., entered the business of Frederick B. Sibley in 1856. He was employed by Mr. Sibley for ten years, and on January 1, 1866, was given an interest in the business, the style of the firm then being F. B. Sibley & Co.

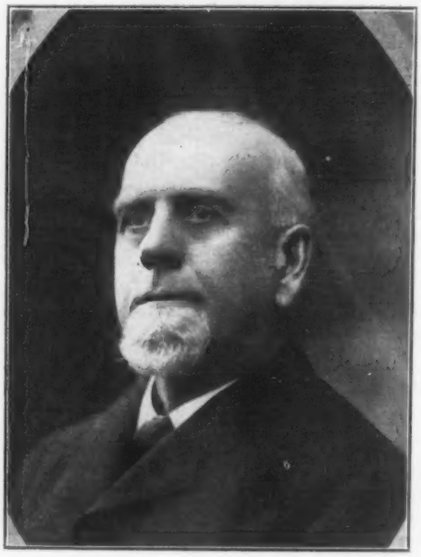
The business was continued for twenty-two years under this name, when Mr. Little withdrew from the company. On October 1, 1887, he established a business for himself, under his own name. In 1898 Mr. Little and Charles Heiden joined forces and established what is now known as the C. H. Little Company. Mr. Heiden had been in the sand business for some forty years, being one of the oldest producers in the country.

The yards of the C. H. Little Company, which are located on Atwater Street, have grown from very small proportions to one of the largest industries in this line. The yard fronts on the river and covers many acres of ground, with switching facilities from the railroads. The business has kept up with the rapid growth of the city of Detroit. The office of the company is located on the fifth floor of the Peninsular Bank Building, and is modern in every way. The company employ 218 men.

The business of the C. H. Little Company is conducted along systematic lines. It has its several departments, and each department is separate and distinct from the other. C. H. Little is president and general manager of the entire business. Charles Heiden, vice-president, is in charge of the sand, sand boats and teams; Miss Ida M. Little, secretary, correspondence; Porter A. Tucker, treasurer, credits and finances; Albert W. Calkins, general manager, plaster, lime and the general detail work, including the salesmen and clerks.

The C. H. Little Company have received many favorable comments on the promptness with which they return empty cement bags and the condition in which they are received by the manufacturers. This is a very important question to the cement manufacturers, for, as a rule, bags are returned to them bundled in a haphazard way, but the C. H. Little Company handle their sacks each day in systematic order. As the bags are received from the customers, they are immediately counted and securely tied in bundles of 50 each. If about 1,000 are accumulated during the day, they are shipped to the manufacturers, even if a shipment is made each day. The bags are placed in stalls, each brand by itself, and an inventory of all empty sacks is taken every afternoon after the shipments have been made. This is easily and quickly done, as the bags are all in bundles, which can be accurately counted. The inventory must balance with the number of bags received and shipped that day, so that any mistake that may happen in the count is easily found and rectified.

One of the most important factors of this company is its sand department. The sand is brought into the city on their own sand boats and is taken from Lake St. Clair and Lake Huron. During the busy season the capacity runs up to 2,000 tons. A part of this sand is unloaded on the docks for stock for winter use, and a part is put directly into very large bins under which the teams pass for gravity loading. During this season as high as fifty and sixty teams left the yards on the first trip early in the morning, loading under these bins 50 wagons in 15 minutes. In the entire business they use about 80 teams.



C. H. LITTLE, DETROIT.
Founder of the C. H. Little Company.

The sand boats are unloaded by two locomotive cranes, a new one having just recently been installed, provided with clam-shell bucket handling nearly two yards at every operation of the mechanism.

Some 10 years ago the company established a plaster mill, starting at first in a small way, and the business increased to such proportions that a large and more modern mill was necessary. The firm completed two years ago one of the largest plaster plants in the Central States, having a capacity of over 150 tons per day. Little's mortars and prepared finishes have more than a local reputation.

Many labor saving devices have been introduced in the construction of this plant. There has been no expense spared in the installation of the very best machinery of sufficient power to easily turn out the large production. This department is under the direction of Albert Calkins, who has had many years' experience, and who is the originator of all the formulæ used by this company in the production of their wall plaster and prepared finishes.

Another large feature in the business of this firm is the crushed stone and lime, the firm handling the entire output of these materials of the Sibley Quarry Company and Monroe Stone Company, located in the suburbs of Detroit. The lime is shipped in mixed carload lots with the various builders supplies to many towns in the State of Michigan.

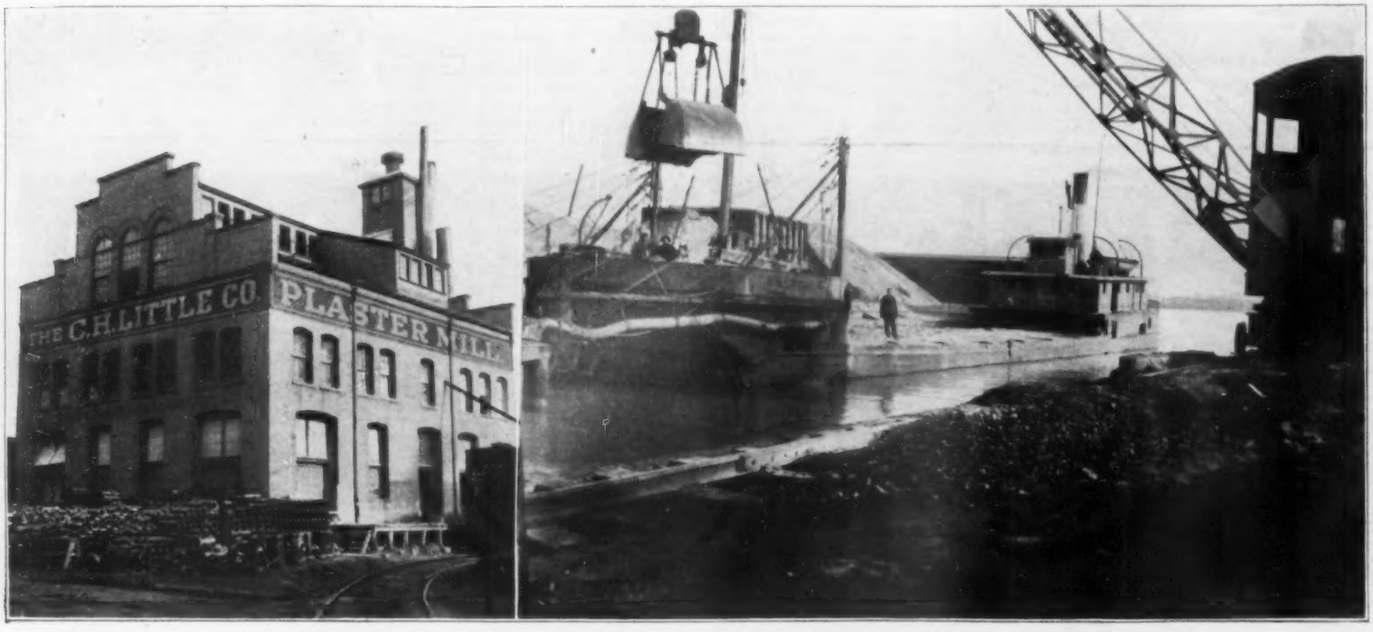
The C. H. Little Company handle a long list of varied specialties, including Cabot's shingle stains and sheathing quilt, Toch Bros.' damp-resisting paints, Youngstown metal lath, ornamental terra cotta and pavers' and builders' supplies generally. They also have an extensive business in Portland cements, being sales agents for the Atlas and other well known brands.

C. H. Little was the first president of the National Builders' Supply Association, which was organized almost ten years ago, and served in this capacity for two years. He has always been in the front rank of association workers, firmly believing in the "live and let live" policy of American progress, and his concern is one of the sound, enterprising necessities of the great and growing city of Detroit, which is the center of its influence and activities.

Building Supplies in New York.

NEW YORK., Dec. 19.—The building supply manufacturers and dealers say that they have never experienced a period like the one they are now going through. The price of cement has taken a tumble, but other building materials seem to hold their own price. This is considered rather strange, but it speaks well for the men engaged in the business that they are able to hold their prices, even in the face of adverse conditions. Sand has always been one of the highest-priced commodities to be considered in building construction, and while the sand men are practically idle, they are still maintaining their price of $2.50 for two cubic yards of Cow Bay sand, which is the principal sand used in construction work. There is no break in the labor ranks. The union scale for labor is being maintained, and the hours as well. Steel corner beads have gone up one cent per foot.

T. J. Wasson, dealer in building materials at Peoria, Ill., is one of the pioneers in that line of business in this section. His office, in a little one-story structure on South Washington street, in that city, which was doubtless built at the time the city was founded, bears out this statement. It is bedecked with all sorts of odd keepsakes—skulls, raccoon skins, etc.—and it is sometimes difficult to get Mr. Wasson to turn from these interesting objects to the cold facts of business conditions. Mr. Wasson makes a specialty of Marquette cement.



PLASTER MILL AND DOCK OF THE C. H. LITTLE COMPANY, DETROIT.

Concrete Engineering

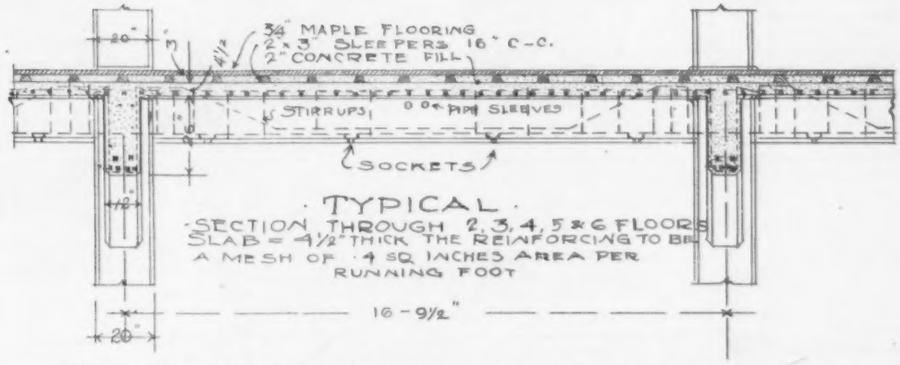
CONCRETE FIREPROOF CONSTRUCTION.

The New Plants of the Victor Talking Machine Company at Camden, N. J., Notable Examples.

PHILADELPHIA, PA., Dec. 15.—In the erection of fireproof buildings, especially large warehouses and factories, where durability and economy are greatly to be considered, reinforced concrete construction has been rapidly accepted as superior to all other forms. Considerable of this work is being carried on or designed in and around the city of Philadelphia. Among the most important examples are the two buildings now being erected in Camden, N. J., for the Victor Talking Machine Company.

Since the disastrous fire several years ago, causing extensive loss of property and serious interruption to its business, the Victor Company has erected only fireproof buildings. An appreciation of the fireproofness and durability of concrete as a structural material has led to its being selected for this purpose. Their concrete buildings at present comprise a four-story record manufacturing building, 70 by 170 feet, a four-story warehouse 60 by 147, a two-story assembling and shipping building 127 by 197, and a four-story office and laboratory 80 by 100, all of which have reinforced concrete columns, floors and roofs, and the last named building has walls also of concrete. In addition to the above, work has now been begun on two additional concrete buildings, one of which will be six stories in height, average story height 13 feet 4 inches, and with a frontage of 80 feet on Second Street and extending in depth 172 feet. The other building will have one story and basement at the present time, with provision made in the construction for five additional stories in the future. This building has a frontage of 175 feet on Cooper Street and 92 feet on Second Street.

Both buildings will have walls of dark red brick laid in colored mortar, with terra cotta trimmings and stone sub-base extending to the bottom of the first story sills. The columns, floors and roof construction will be of reinforced concrete. The concrete throughout is a mixture of 1 cement, 2 gravel and 4 parts broken trap rock. For the columns, the reinforcement consists of patent cold-twisted hexagonal steel bars rolled with projections or lugs at intervals to increase the adhesion of the concrete to the steel. The reinforcement for the beams and girders consists of square steel bars bent to proper shape and securely fastened together, assembled into girder frames which are set into the molds as a whole, insuring that the rods occupy the relative position intended by the design in order to properly resist the tensile stresses. These frames also have diagonal shear members or stirrups rigidly attached to them, to resist the shearing stresses in the concrete. A unique feature of these girder frames is the provision made for tying the ends of each frame to the ends of the opposite frames by means of a special pin and link connection. The object of this construction is to tie each beam to the next one, forming a continuous connection without depending upon the adhesion of the concrete to the steel.

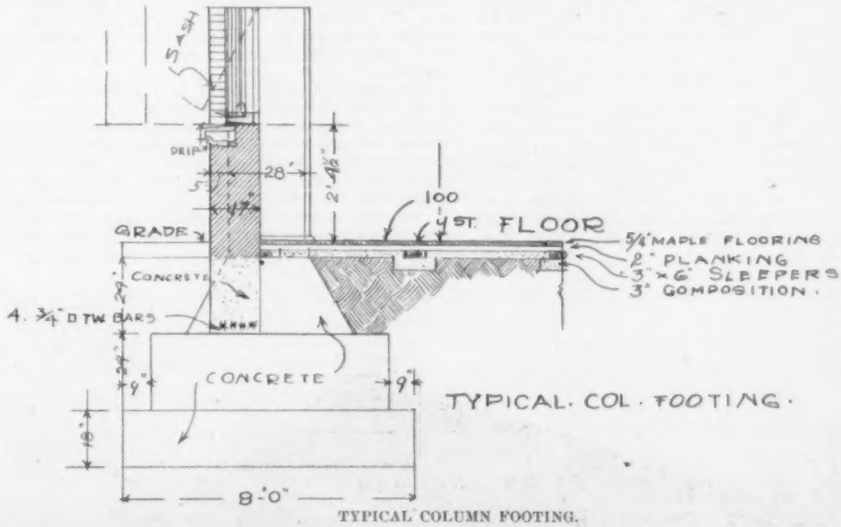


TYPICAL FLOOR SECTION OF THE VICTOR TALKING MACHINE COMPANY'S NEW PLANTS.

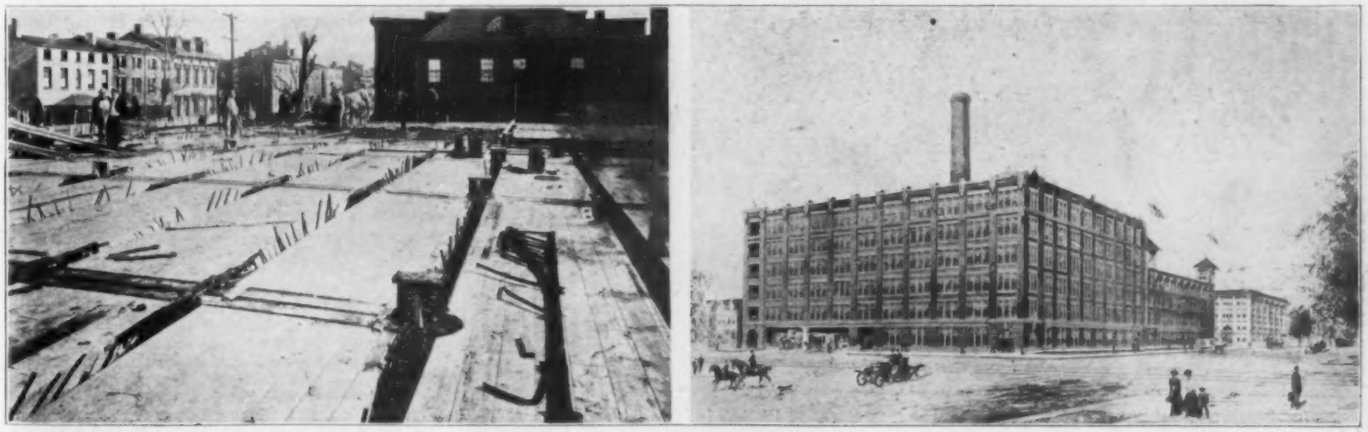
The floor slabs will be reinforced with expanded metal. With the exception of the boiler-room, the interior columns as well as the wall columns are square in section, with chamfered edges, and vary in size from 20 inches in the first story to 12 inches in the fifth story, for typical columns. Columns in the basement and first three stories are reinforced with cores, composed of steel angles in addition to the lug bars previously referred to. In the fourth and fifth stories the columns are reinforced with lug bars only.

The beams and girders are of rectangular section with beveled edges. Typical girders are 12 inches wide by 26 inches deep, reinforced with six 1¼-inch square bars, and typical beams, 8 by 15 inches, reinforced with four ⅞-inch square bars, both beam and girder reinforcement being in the form of pin-connected frames as mentioned above. Girders have a span of 22 feet 4 inches, and beams 16 feet 10 inches.

All floors are designed for a live load of 225 pounds per square foot. The concrete floor slabs are 4½ inches thick with a span of 5 feet 7 inches and reinforced with expanded metal. Upon the slabs a wearing surface of 5/4 maple flooring is laid upon wood sleepers, the intervening space between the sleepers being filled in with cinder concrete. On the first floor of the six-story building



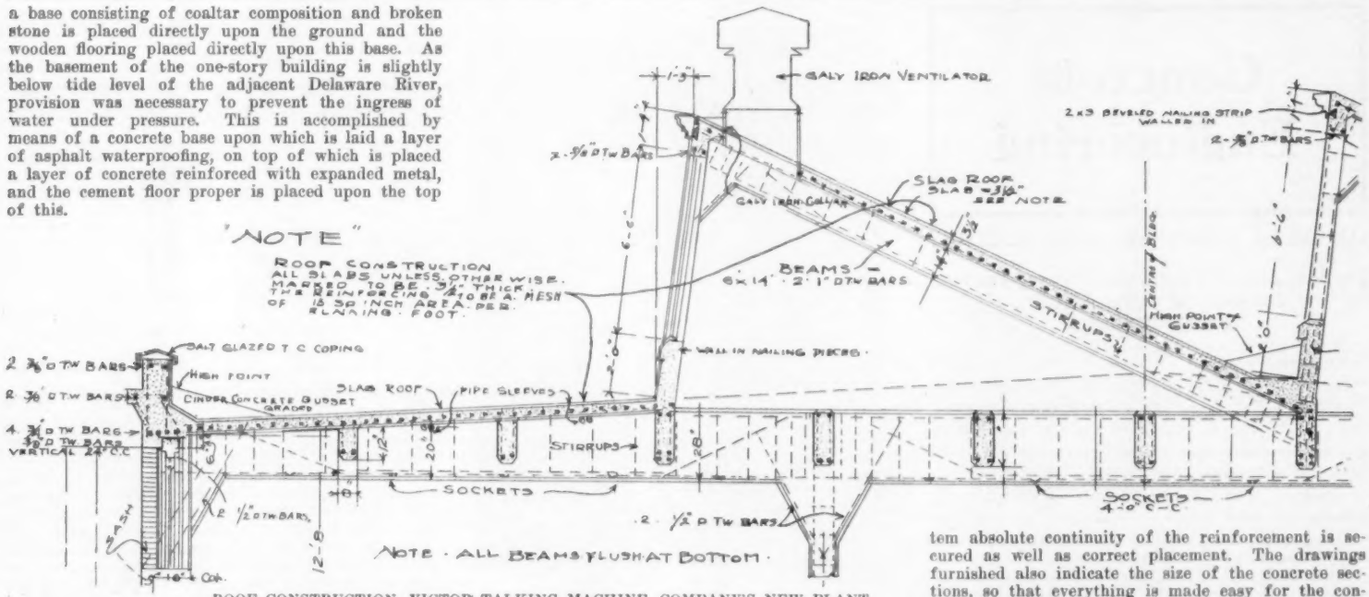
TYPICAL COLUMN FOOTING.



NEW PLANTS OF THE VICTOR TALKING MACHINE COMPANY AT CAMDEN, N. J.

1. Second-story Forms, Showing Pin-Connected Girder Frame Reinforcement. (Note how girder frames in one bay are connected with those in the next.) 2. General View of the Plants.

a base consisting of coaltar composition and broken stone is placed directly upon the ground and the wooden flooring placed directly upon this base. As the basement of the one-story building is slightly below tide level of the adjacent Delaware River, provision was necessary to prevent the ingress of water under pressure. This is accomplished by means of a concrete base upon which is laid a layer of asphalt waterproofing, on top of which is placed a layer of concrete reinforced with expanded metal, and the cement floor proper is placed upon the top of this.


GALV IRON VENTILATOR
2 x 3 BEVELED NAILING STRIP WALLED IN
SLAB ROOF SLAB - 3½" SEE NOTE
GALV IRON COLLAR
"NOTE"
ROOF CONSTRUCTION
ALL SLABS UNLESS OTHERWISE MARKED TO BE 3½" THICK. THE REINFORCING TO BE A MESH OF .18 SQ INCH AREA PER RUNNING FOOT.
BEAMS - 6 x 14 - 2 1" DTW BARS
STIRRUPS
CINDER CONCRETE GUSSET GRADED
HIGH POINT
GUSSET
WALL IN NAILING PIECES
SALT GLAZED T C COPING
HIGH POINT
SLAB ROOF
PIPE SLEEVES
STIRRUPS
SOCKETS
SOCKETS
NOTE - ALL BEAMS FLUSH AT BOTTOM

ROOF CONSTRUCTION, VICTOR TALKING MACHINE COMPANY'S NEW PLANT.

Maximum daylight illumination is obtained by the use of triple window construction, with narrow mullions and small wall piers between. Windows on the court side of the buildings will have standard metal frames and sash glazed with wireglass. Concrete saw-tooth skylights, also, are provided in the roof.

Tower fire-escapes connecting with all floors will be placed in both buildings, the openings to which will be provided with standard tin-clad fire-doors. One passenger and two freights elevators, enclosed in fireproof shafts, provide additional means of communication between stories.

The patented pin-connected steel girder frames and lug bars, as well as the expanded metal reinforcement, are furnished by the General Fireproofing Company, Youngstown, O. Ballinger & Perrot, architects and engineers, Philadelphia, have entire charge of the design and supervision of the work. The same architects also designed and supervised all the other concrete buildings for the Victor Company.

Breaking Another Record.

We publish in this issue a cut of a new four-story warehouse being erected at Waterloo, Ia., by the Wangler Bros. Company under the expanded steel system of reinforced concrete supplied by the Northwestern Expanded Metal Company, 930 Old Colony Building, Chicago. Many ROCK PRODUCTS readers saw the display of this company at the Chicago Cement Show and particularly noticed the sixteenth-scale model of the system, which attracted general attention.

The expanded steel system is a complete structural frame, consisting of columns, girders, stress bars and slab sheets. In making shipment of the system for any certain job, working drawings are furnished so that the contractor goes ahead and erects the frame much as he would a steel structure. There is absolutely no room for misplacement of the steel in the concrete and no opportunity for the dishonest contractor to leave out any steel that should go in. By the use of the expanded steel system absolute continuity of the reinforcement is secured as well as correct placement. The drawings furnished also indicate the size of the concrete sections, so that everything is made easy for the contractor. In the case of the structure illustrated, the concrete work was commenced October 12 and completed December 11, making the American speed record for this class of construction on a building of equal size.

THE WANGLER BROS. STORE BUILDING, WATERLOO, IOWA.

The Thomas System of Wall Construction.

Nearly two years ago Professor A. O. Thomas of the Nebraska State Normal College, took up the problem of improving the best systems of concrete wall construction then known. He realized that the first and most complete success of cement was expressed in sidewalk work, and observed that none of the many attempts at adapting materials made with cement for wall construction were employing the most signal example of success in the industry. As the result of his labors Professor Thomas developed a new system which is radically different from all others and combines practically all of the good points known, together with the employment of the well known principle of troweling the exposed surface so as to secure the well known advantages of the sidewalk top dressing. This was accomplished by making the outside or wall surface "face up" instead of "face down" or "side face," as all others have done. Further, the Thomas system provides a practical and scientific method for insulating the inner wall from the outer wall by means of interlocking shapes which provide for every possible structural requirement. With architects, engineers and the highest class of contractors this system at once gained popularity, and it has been tested out in practice, with complete satisfaction invariably. The Thomas system has been thoroughly developed and stands as the complete realization of all the inventor set out to accomplish.

Within the present year the Thomas Cement Construction Company has been organized at Joliet, Ill., for the purpose of building machinery and equipping complete plants for the manufacture of wall building materials of Portland cement and properly selected aggregates of sand or crushed stone by the Thomas system. The principal sales office of the company has been located in the Woman's Temple Building at Chicago, in charge of H. R. Corbett, who has been selected as the general manager. Mr. Corbett is a man of experience in this especial line, having long been associated with most satisfactory and successful concerns in the new industry.

They exhibited their machinery in actual operation at the recent Chicago Cement Show, together with sample walls of the material laid up for inspection, in charge of Mr. Corbett, Mr. Antrim and other officials of the company. It was the first public demonstration of the system, and attracted a great deal of attention on the part of practical cement workers. In fact, it constituted a leading feature of the great show.

Arrangements have been complete to repeat the exhibit at the Buffalo Convention in January next and, if possible, make it still more convincing by demonstrating every part of the process. Mr. Corbett has a way of saying: "This is just what you have been looking for all this long time," when he begins to explain the attractive features of the Thomas system.

Concrete.

BUFFALO CONVENTION.

The Fourth Annual Meeting and Exposition of the National Association of Cement Users, January 20 to 25, to Constitute a Red-Letter Week in the History of the Industry.

BUFFALO, Dec. 18.—Dai H. Lewis, manager, and George C. Fehrman, assistant manager of the fourth annual convention of the National Association of Cement Users, which meets here next month, are kept busy allotting space to the numerous applicants for accommodation. Applications have come from various parts of the country and Canada, and Alfred W. Thorn, of the Thorn Cement Company, Buffalo, estimates that the convention will be attended by some 800 cement users and dealers in the machinery and tools used in the cement industry. Three Buffalo firms are to exhibit extensively. The general attendance will exceed that of any previous gathering of this kind.

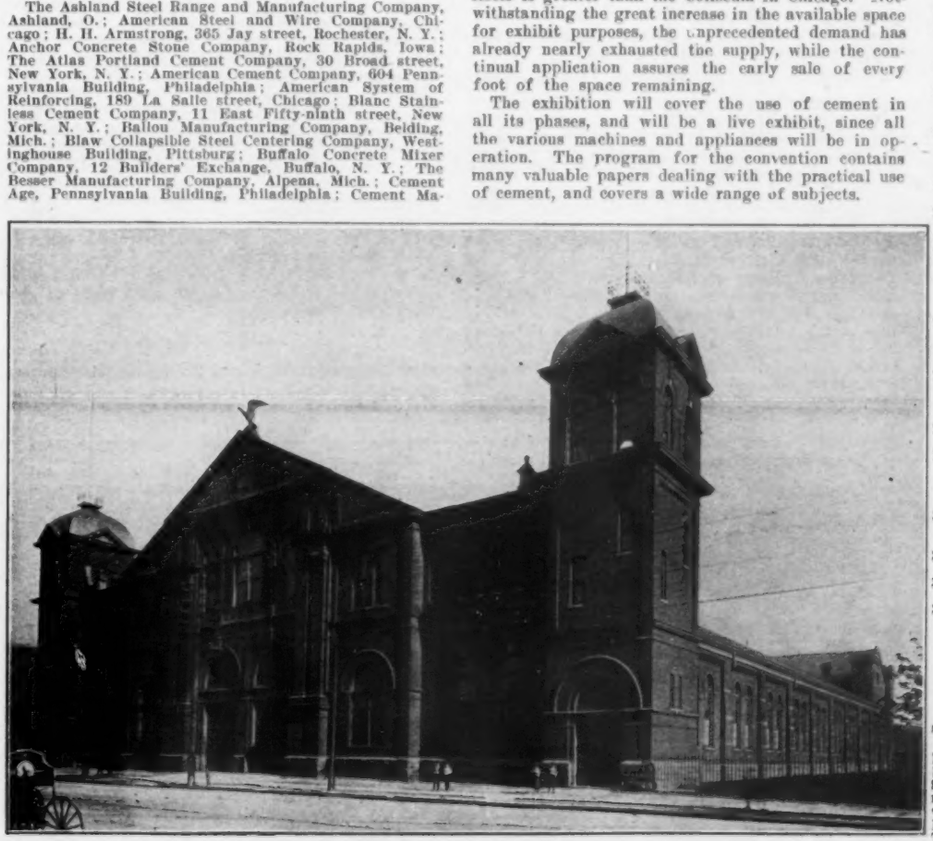
The convention will be held from January 20 to 25 inclusive. Headquarters for the National Association will be at the Iroquois Hotel, and the exhibition will be held in the old Sixty-fifth Regiment Armory, a building of ample proportions within a few minutes' walk of the center of the city and located in a street having excellent car service.

Further plans for the local end of the convention are not yet completed. Mr. Fehrman will announce the final arrangements later. Following is a list, up to date, of the companies to exhibit, and their home adresses:

The Ashland Steel Range and Manufacturing Company, Ashland, O.; American Steel and Wire Company, Chicago; H. H. Armstrong, 365 Jay street, Rochester, N. Y.; Anchor Concrete Stone Company, Rock Rapids, Iowa; The Atlas Portland Cement Company, 30 Broad street, New York, N. Y.; American Cement Company, 604 Pennsylvania Building, Philadelphia; American System of Reinforcing, 189 La Salle street, Chicago; Blanc Stainless Cement Company, 11 East Fifty-ninth street, New York, N. Y.; Ballou Manufacturing Company, Belding, Mich.; Blaw Collapsible Steel Centering Company, Westinghouse Building, Pittsburg; Buffalo Concrete Mixer Company, 12 Builders' Exchange, Buffalo, N. Y.; The Besser Manufacturing Company, Alpena, Mich.; Cement Age, Pennsylvania Building, Philadelphia; Cement Machinery Company, Cooley Block, Jackson, Mich.; The Concrete Stone and Sand Company, Youngstown, O.; California Artificial Stone Supply Company, 510 Board of Trade Building, Toronto, Ont.; The Chase Foundry and Manufacturing Company, Parsons avenue and Hocking Valley Railroad, Columbus, O.; Clover Leaf Machine Company, South Bend, Ind.; Century Cement Machine Company, 18 West Main street, Rochester, N. Y.; Dykema Company, 14 Huron street, Grand Rapids, Mich.; The D. & A. Post Mould Company, Three Rivers, Mich.; Charles Dietrichs, Kaufman avenue, Little Ferry, N. J.; Eureka Machine Company, Lansing, Mich.; Edmondson Concrete Machinery Company, William and Indiana street, South Bend, Ind.; The Garden City Sand Company, Fifth avenue and Madison street, Chicago; Tock Bros., New York, N. Y.; Hartwick Machinery Company, Mechanic street, Jackson, Mich.; Hydraulic Concrete Machine Company, 16 Builders' Exchange, Buffalo, N. Y.; A. C. Horn Company, 8 Burling Slip, New York, N. Y.; Ideal Concrete Machinery Company, 106 Mill street, South Bend, Ind.; The International Fence and Fireproofing Company, Buttles avenue, Columbus, O.; F. M. Jackson, Akron, N. Y.; Koehring Machine Company, 502 Germania Building, Milwaukee; The Knickerbocker Company, Jackson, Mich.; Kramer Automatic Tamper Company, 107 Franklin street, Peoria, Ill.; Lumen Bearing Company, Sycamore street and New York Central tracks, Buffalo, N. Y.; The P. B. Miles Manufacturing Company, Jackson, Mich.; the Multiplex Concrete Block Machine Company, Toledo, O.; Miracle Pressed Stone Company, Nic Island street, Minneapolis; S. G. McTarnaghan, Fillmore, N. Y.; S. F. Nicolai, 39 Sycamore street, Detroit, Mich.; Northwestern Expanded Metal Company, 930 Old Colony Building, Chicago; The New Way Motor Company, Lansing, Mich.; Peerless Brick Machine Company, 13 Sixth street N., Minneapolis; The Perfection Block Machine Company, Kasota Building, Minneapolis; The Simpson Cement Mold Company, 496 North High street, Columbus, O.; The Standard Machine Company, dusky, O.; Simplex Manufacturing Company, 124 West Kent, O.; Sandusky Portland Cement Company, San-Cortland street, Jackson, Mich.; John Svenson, 602 Bessemer Building, Pittsburg; Star Cement Block Machine Company, Dallas City, Ill.; R. Z. Snell Manufacturing Company, 1801 Ernsperger street, South Bend, Ind.; Thompson Cement Stone Company, P. O. Box 358, Gowanda, N. Y.; Universal Portland Cement Company, 524 Frick Building, Pittsburg; Wettlaufer Bros., 497 Ellicott street, Buffalo, N. Y.; Wadsworth, Howland & Co., 84 Washington street, Boston; The Whitehall Portland Cement Company, 1722 Land Title Building, Philadelphia; Charles E. Zimmerman, 204 Burnet avenue, Syracuse; Chicago Concrete Machinery Company, 20 South Canal street, Chicago; Louis Auer & Son, Second Ward Bank Building, Milwaukee; The Edison Portland Cement Company, St. James Building, New York; Francisco Block Machine Company, 338 North High street, Columbus, O.; Association of American Portland Cement Manufacturers, Land Title Building, Philadelphia; Thomas Cement Construction Company, Joliet, Ill.

The exhibition will be by far the greatest cement show that has ever been held in this country. The old Sixty-fifth Regiment Armory is admirably suited for the purpose. It has a larger floor area than any previous exhibition. The entire building (Tattersall's) in which last year's exhibition was held can be placed within this armory, while the exhibit space itself is greater than the Coliseum in Chicago. Notwithstanding the great increase in the available space for exhibit purposes, the unprecedented demand has already nearly exhausted the supply, while the continual application assures the early sale of every foot of the space remaining.

The exhibition will cover the use of cement in all its phases, and will be a live exhibit, since all the various machines and appliances will be in operation. The program for the convention contains many valuable papers dealing with the practical use of cement, and covers a wide range of subjects.



SIXTY-FIFTH REGIMENT ARMORY, BUFFALO, N. Y.

The Tentative Program.

It is of course impossible to give the exact program in detail at this time, but the following tentative arrangement will hold good in all important particulars. It offers a wealth of profitable and educational instruction. The paper which Richard L. Humphrey, the president of the association and head of the United States testing laboratories at St. Louis, has prepared for this occasion will be alone worth the small expenditure of time and money which attendance on this great gathering will involve. Mr. Humphrey is a recognized authority the world over in his special line, and his untiring efforts in the cause of the new century's greatest industry deserve the unstinted approbation and gratitude of the general public, and especially of those particularly interested in cement and cement products.

Following is the program now outlined:

MONDAY, JANUARY 20, 1908.

1. Formal opening of the exhibition in the old Sixty-fifth Regiment Armory at 12 o'clock noon.

TUESDAY MORNING, JANUARY 21.

2. Formal opening of the convention, Concert Hall, 10 a. m.
3. Address of welcome by Mayor James N. Adams, Buffalo, N. Y.
4. Response by President Richard L. Humphrey.
5. Business session.
6. Cement Sidewalks—C. W. Boynton, Chicago, Ill.
7. Report of Committee on Streets, Sidewalks and Floors—George L. Stanley, chairman, Ashtabula, Ohio.

TUESDAY EVENING, JANUARY 21, 8 O'CLOCK.

8. President's address—Richard L. Humphrey.
9. Elementary Mechanics of Reinforced Concrete—Prof. W. H. Hatt, Professor of Civil Engineering, Purdue University, Lafayette, Ind.
10. Factory-Built Concrete—W. H. Mason, superintendent Edison Portland Cement Company, Stewartsville, N. J.
11. The Necessity for Continuity in the Steel Reinforcement of Concrete Structures.

WEDNESDAY MORNING, JANUARY 22, 9:10 O'CLOCK.

12. Meeting of Section on Concrete Blocks and Cement Products.

10 O' CLOCK.

13. Report of Committee on Testing Cement and Cement Product—E. S. Larned, chairman, Boston, Mass.
14. Report of Committee on Concrete Blocks and Cement Products—S. B. Newberry, chairman, Sandusky, Ohio.
15. Report of Committee on Machinery for Cement Users—M. Wetzstein, chairman, South Bend, Ind.

15a. Business session. (*a*) Report Executive Committee; (*b*) Place of next convention; (*c*) Election of officers.

WEDNESDAY EVENING, JANUARY 22, 8 O'CLOCK.

16. Concrete as a Plastic Material for the Expression of Architectural Ideals—Irving K. Pond, architect, Chicago, Ill.
17. Treatment of Concrete Surfaces.
18. Artistic Effects in Reinforced Concrete—Ross F. Tucker, president Concrete Association of America, New York, N. Y.
19. Exposed Selected Aggregates in Monolithic Concrete Construction—Albert Moyer, New York, N. Y.
20. Report of Committee on Art and Architecture—Charles D. Watson, chairman, Pittsburg, Pa.

THURSDAY MORNING, JANUARY 23, 9-10 O'CLOCK.

21. Meeting of Sections on Reinforced Concrete; Streets, Sidewalks and Floors.

10 O'CLOCK.

22. Progress in Manufacture and Use of Cement Building Blocks—A. N. Pierson, East Orange, N. J.
23. Proportioning and Mixing Cement Mortars and Concretes.
24. Architectural Concrete in Landscape Work.
25. Waterproofing Cement Structures.

THURSDAY EVENING, JANUARY 23.

Reserved for social entertainment.

FRIDAY MORNING, JANUARY 24, 9-10 O'CLOCK.

26. Meeting of Sections on Laws and Ordinances; Fireproofing and Insurance.

10 O'CLOCK.

27. Practical Methods Involved in the Erection of a Reinforced Concrete Building—H. H. Fox, superintendent Turner Construction Company, New York, N. Y.
28. Manipulation of Forms in Concrete Construction: (*a*) Wooden forms; (*b*) Metal forms.
29. The Unit vs. the Loose Bar System of Reinforced Concrete Construction—Emile G. Perrot, architect, Philadelphia, Pa.

FRIDAY EVENING, JANUARY 24, 8 O'CLOCK.

30. Use of Cement in Manufacture of Drain Tiles, Roofing Tiles, Railroad Ties, Telegraph Poles, Piles and Posts.
31. Report of Committee on Fireproofing and Insurance—William L. Bailey, chairman, Boston, Mass.
32. Report of Committee on Laws and Ordinances—H. C. Henley, chairman, St. Louis, Mo.
33. Progress in the Investigation of Cement Mortars and Concretes in the Structural Materials Testing Laboratories of the United States Survey, St. Louis, Mo.—Richard L. Humphrey.

SATURDAY, JANUARY 25, 11 P. M.

Closing exhibition in the old Sixty-fifth Regiment Armory.

The officers and vice presidents in charge of the various sections are as follows:

President, Richard L. Humphrey, Harrison Building, Philadelphia, Pa.; first vice president, Merrill Watson, East Orange, N. J.; second vice president, M. S. Daniels, Suffern, N. Y.; third vice president, O. U. Miracle, Minneapolis, Minn.; fourth vice president, A. Monsted, Milwaukee, Wis.; treasurer, H. C. Turner, 11 Broadway, New York; manager fourth convention, Dai H. Lewis, 760 Main street, Buffalo, N. Y. Section vice presidents—Concrete blocks and cement products, S. B. Newberry, Sandusky, O.; street, sidewalks and floors, George L.

Stanley, Ashtabula, O.; reinforced concrete, T. L. Condron, Chicago, Ill.; art and architecture, Charles D. Watson, Pittsburg, Pa.; testing cement and cement products, E. S. Larned, Boston, Mass.; machinery for cement users, W. Wetzstein, South Pend, Ind.; fireproofing and insurance, H. C. Henley, St. Louis, Mo.; laws and ordinances, William L. Bailey, Boston, Mass.

All the railroads have granted reduced rates to this convention—fare and one-third for the round trip. Tickets may be obtained on or after January 16, but not later than January 22, and purchasers must be sure to obtain a certificate, as all the reduction is taken out of the charge for the return trip. Inquire of your ticket agent for full particulars, as certificates are not kept at all stations. A receipt for fare does not take the place of a certificate.

Special rates have also been made at all the leading hotels in Buffalo. Besides the business and educational advantages of this combined convention and exposition, the oportunity offered to see the Niagara Falls in winter—one of the grandest sights human eyes ever beheld—is alone worth a special effort.

A Permanent Concrete Exposition.

NEW YORK, Dec. 16.—The Concrete Association of America is composed of those who are desirous of encouraging and developing the intelligent and scientific use of concrete, to standardize methods of construction, to promote social intercourse among those engaged in concrete construction and its allied fields, and to secure an exchange of views upon subjects of interest and to collect and circulate accurate and reliable data and information relating to all matters pertaining to and affecting the concrete industry.

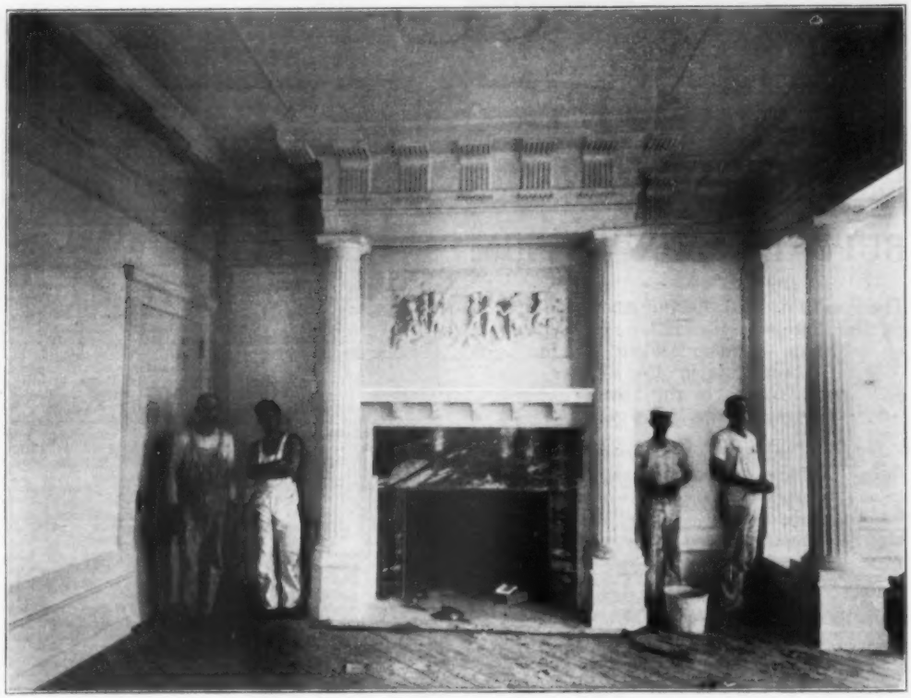
The work of the association, as seen from the above, is largely to be devoted to educating the investing public, architects, engineers and concrete contractors in the scientific, practical and proper use of Portland cement concrete. The members of the association realized that the very best method of obtaining this end and of advancing the concrete and fireproof building construction was to show those interested what can and has been done.

The association has leased part of the eleventh floor of the Brunswick Building, located in the building center of New York City, at Fifth Avenue, Twenty-sixth and Twenty-seventh Streets. Here it has installed a permanent exhibition of the various products in concrete reinforcements, methods of construction and materials which are closely allied with the concrete and fireproof building industries. It is the first exhibition of its kind in the United States, and it has the support of those who represent the best in the industry.

The accompanying half-tones show a few of the representative exhibits. Like the others, they are of the highest class and are thoroughly practical in every way, as it has been the endeavor of the exhibitors to show each step in the various stages of construction.

Aside from the interest derived from studying the different types of construction, an excellent idea of the ornamental possibilities of concrete is shown by the different surface treatments and artistic mold work which has been incorporated in the various exhibits. Those who are interested in concrete or fireproof building construction will be amply repaid for a visit to the exhibition hall. The secretary is in constant attendance, and from him visitors can always get authentic information in regard to any of the exhibits.

The officers of the Concrete Association of America are as follows: President, Ross F. Tucker of Tucker & Vinton; first vice-president, H. C. Turner of the Turner Construction Company; second vice-president, Merrill Watson of the Expanded Metal Engineering Company; third vice-president, John T. Simpson of the American Concrete Steel Company; secretary, T. G. Barr of the Vulcanite Cement Company; treasurer, Ronald Taylor; assistant secretary, R. C. Davison.



MUSIC-ROOM IN RESIDENCE OF GEN. JOHN L. BULLIS, SAN ANTONIO, TEX.

CEMENT BLOCK CONSTRUCTION.

(*Continued from page 3.*)

In constructing this building no pains have been spared. It is without question the handsomest residence ever erected in the South. About one year's time was required in which to complete it.

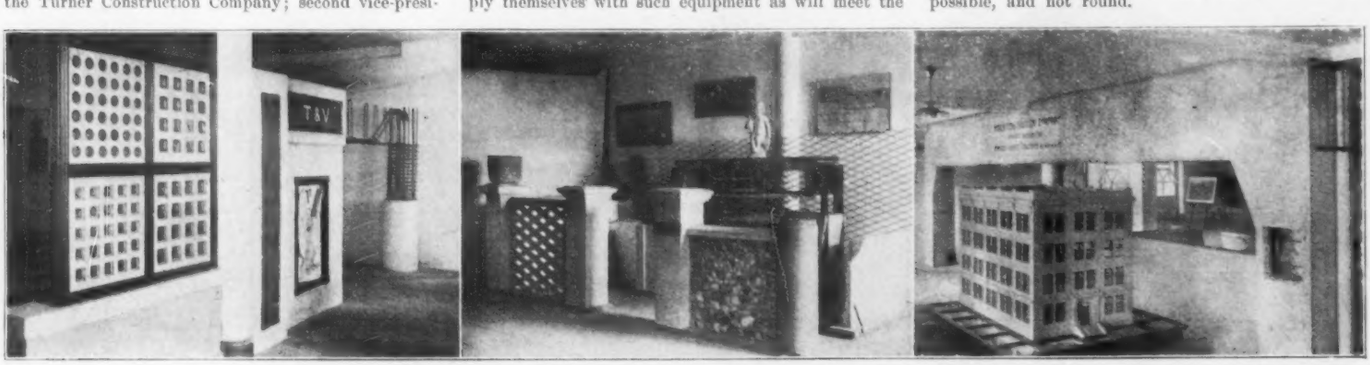
This model will tend greatly to advance concrete stone construction generally. The strength and durability of properly made stone is no longer questioned, the main objection of the past having been due to the general appearance of the majority of buildings erected. Many builders have been led to believe that a concrete block building does not require the aid of a competent architect, and as a result unsightly buildings are often seen which might have been made unusually attractive had an architect been consulted. On the other hand, there are architects who have not familiarized themselves sufficiently with the concrete block and the possibilities of the different makes of machines designed for producing it. This may be due to the fact that their attention has only been called to some of the many small and poorly designed machines, which they readily realize cannot allow them sufficient scope or range of adaptability to carry out their ideas of a really attractive structure.

Producers of concrete stone must endeavor to supply themselves with such equipment as will meet the demands of the most exacting builder and architect. They simply have to get beyond the one-size, one-design type of machine, which are cheap at first cost but expensive in the end, for every building erected with them is a detriment rather than a help to the industry.

Harvey L. Page, the architect who designed this fine specimen of concrete stone work, is to be congratulated upon taking the lead and producing such a splendid success. To him it means more commissions, for people will follow the leaders in every line. General Bullis, the patron of the new material, has taken the initiative to show the people of the South what can be accomplished with intelligence by the use of local materials, and the grandeur of his palatial home is another reward. The interior of this building is quite as elegant as the exterior view could suggest. Rich, artistic effects in plaster and marble trimmings have been obtained, for both General Bullis and Architect Page have considered the asthetic excellence of every detail, as the typical interior view of one of the parlors shows.

The Century Cement Machine Company of Rochester, N. Y., builders of the "Hercules" machine, which was used in making all of the concrete stone in this magnificent job, have simply added another well-deserved leaf to the laurel crown made of good work already recorded.

A communication to the Bureau of Manufactures states that large quantities of quartz sand for abrasive purposes (sandpaper, etc.) are wanted for export from an Atlantic port. The sand must be clean and the single sand cones sharp-edged, as far as possible, and not round.



SOME OF THE EXHIBITS IN THE PERMANENT CEMENT EXHIBITION, NEW YORK CITY.
1. Tucker & Vinton. 2. Expanded Metal Engineering Company. 3. Turner Construction Company. (The beam is from the Webber Construction Company.)

"KOSMOS"

Kosmos Portland Cement is the product of a model plant, using high grade raw materials and under the direction of a staff of experienced cement engineers.

It is guaranteed the equal of any American Brand of Portland Cement and will be found to run uniform

in color, strength and fineness. It is suitable for any class of work and is especially recommended where the requirements are exacting.

Manufactured by the

Kosmos Portland Cement Co., Inc.

BUSINESS OFFICE: 614-616 Paul Jones Bldg., Louisville, Ky. **WORKS: Kosmosdale, Jefferson Co., Ky.**

BEST FOR STONE SAWING, ROOFING, CEMENT BLOCK FACING, STUCCO, WHITE PLASTER

Washed White Flint Sand

Prices, Samples and Freight Rates furnished on application. Write us.

United States Silica Co.

1044 AMERICAN TRUST BLDG.

Works: Ottawa, Ill. CHICAGO, ILLS.

ARE YOU INTERESTED IN

CEMENT WATER-PROOFING?

MAUMEE WATER-PROOFING COMPOUND

is made in a dry powdered form.

Added to cement work, of any character, will make concrete work, cemented walls, cisterns, reservoirs, sewers, conduits, etc., etc., absolutely impervious to water and dampness.

IS NOT A WASH

From 2 to 4 lbs to each 100 lbs of cement in different classes of work, will insure dry and waterproof results.

Indispensable for cement blocks.

Invaluable in the manufacture of cement shingles, tiling, sewer pipes, silos and tanks.

Leaks in old cement work can be effectually closed by the use of our compound.

Try a sack if you would see the best Water-Proofing Compound on the market.

Special low prices quoted on car and ton lots—also on smaller lots, upon application.

Send for full particulars, testimonials, etc.

THE MAUMEE CHEMICAL COMPANY

512 St. Clair Building, - TOLEDO, OHIO.

The BATES VALVE BAG

The strongest and most perfect package for shipping and storing cement

Economical packing and smallest percentage of breakage

IT IS WATER PROOF!

The West Jersey Bag Co.

Front and Elm Streets CAMDEN, N. J.

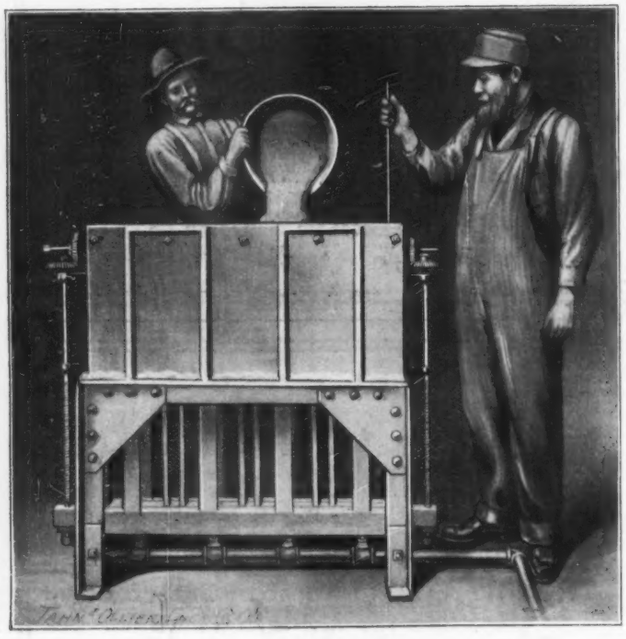
CONCRETE FIREPROOFI

The Most Important Exhibit at

With the addition of a complete demonstrating p
Buffalo Convention, January 20-25. We will
marketed, using cement and practical materials

Wet concrete and steam is employed in the manufacture of these tiles, using the most approved methods and intelligently prepared materials.

The concrete mixture is prepared to the consistency of a paste of Portland cement and a suitable granulated aggregate of crushed stone, furnace slag or gravel with sand in proportions approximating 1 cement, 3 sand and 5 of the other aggregate, with sufficient water to give plasticity for pouring. These are thoroughly mixed together in quantities convenient for handling.



Method of Pouring the Concrete Mixture into the Mold.

Supply dealers prefer the Pauly Poured and Pushed Tile and Sewer Pipe because every piece is perfect, tough and 20 per cent breakage is thereby eliminated.

(From a Photograph.) An Assortment of the Finis

THE PAULY POURED CONC

meets fully every reasonable structural requirement. It constitutes
expected. Eminent architects and engineers, upon investigation, giv
beyond any possible competition. Repeated compression tests show
for the right people at important markets. Come to Buffalo with

A. A. PAULY

Concrete Stone and San

SEND FOR COMPLETE ILLUSTRATED LIT

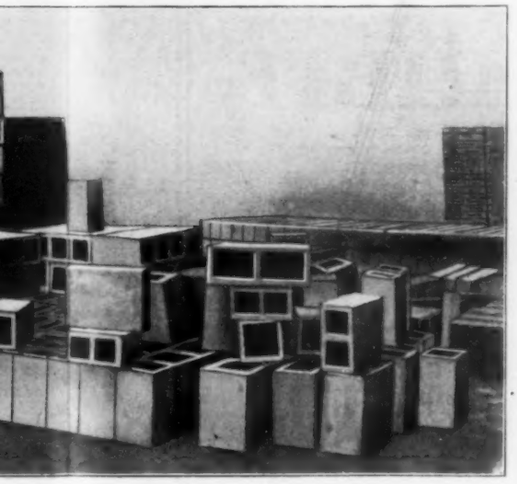
FING TILE PERFECTED

t at the Chicago Cement Show

rating plant, the exhibit will be repeated at the
e will manufacture the actual product as it is
aterials

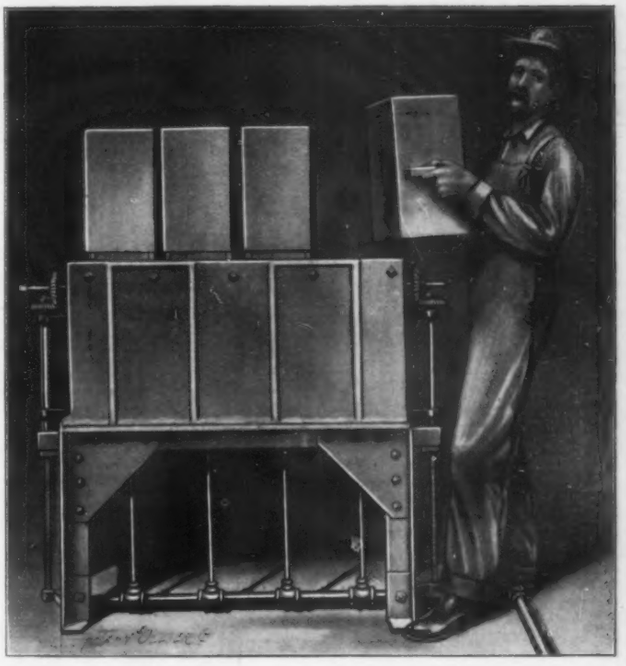
proved
itable
proxi-
ty for

Molds can be made in any desired dimensions and in every shape known to good structural usage. Tiles have been made using aggregates of crushed limestone, crushed trap rock, granulated slag, graded gravel and course sand. All of these have been thoroughly tested, and in compression all of them have been demonstrated to be fully up to the same test of the clay tiles now in use, while the tile made from trap rock and slag aggregates far exceeded the tests of any other known material designed for like purposes. The breakage in manufacturing 10,000 tile amounts to less than 1 per cent.



MENT OF THE FINISHED PRODUCT.

There is no limit to the shapes or special configurations of form of the finished product which may be produced, nor is the thickness or web of tile or pipe limited.



METHOD OF EJECTING AND REMOVING THE FINISHED TILE

NCRETE STRUCTURAL TILE

stitutes the revolution in fireproofing material that has long been
tion, give this line of materials unqualified endorsement. Fireproof
sts show unequaled structural value. We have a big opportunity
o with your credentials to do business.

ULY, Inventor

and Co., Youngstown, O.

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THE WHITEHALL EXHIBIT

AT

CHICAGO, DECEMBER 17-21

Look For Us in the Exhibit Hall at

BUFFALO

JANUARY 20-25

The Quality of Whitehall Makes Possible Artistic Treatment of Cement in the High Arts

The Whitehall Portland Cement Company

1719 Land Title Building, PHILADELPHIA

BOSTON **ATLANTA**

FIRST CHICAGO CEMENT SHOW.

The Growth of the Industry Shown in the Most Successful Trade Exposition Ever Held in the West.

The ever-increasing wave of interest in the great American Portland cement industry is reaching out to people in every walk of life. On every hand the observer is challenged with successful achievements that are credited to the use of Portland cement in one form or another. And the general public have begun to realize that the limitations of this most wonderful of materials have not nearly been reached.

Skyscrapers, modest dwellings, bridges, tunnels, dams and roadways are being constructed with it in every part of the country. With equal adaptability has the seawall of Galveston been constructed, and even in frigid Alaska are they building houses with it. The New York subway tunnels, the biggest buildings in every city and town of the Mississippi Basin, and the rebuilding of the new city of San Francisco have all been made possible by the development of the knowledge of the correct use of Portland cement.

A new vista to the engineer has been flung open, and even the most conservative architect of the period must join the "cement band of progress" or fall to the rear.

The farmer has learned the hygienic cleanliness of cement to conserve and create new values in the handling of stock, and the largest stockyards of the world, in this city, are being rebuilt of cement concrete because it prevents the propagation of disease among cattle and other food animals.

The modest householder knows how to pave his own cellar and fashion with his own handiwork hundreds of conveniences that were unknown to princes of the past.

So cement has come to be a factor of no small moment in the advance of civilization. Cement is the product of the earth of most universal adaptability, and it is contributing more tangible blessings to people now living that will be passed on to posterity than perhaps any other avenue of human enterprise.

Such are the causes that led up to the First Annual Chicago Cement Show and the basic principles of human interest that attracted the throngs that surged through the aisles and avenues of the Coliseum from the morning of December 17 to the closing hours on December 21. Thousands upon thousands of people residing near enough to the great central market of Chicago were there studying cement concrete, for almost every man in America feels that somewhere in this mighty development of the new century there is something for him.

THE FORMAL OPENING.

There was a big crowd in the great Coliseum long before the appointed hour for the formal opening exercises. So intent were the visitors and the exhibitors in the main quest of the occasion that there was little attention given to the grand overture from "William Tell." However, promptly at 8 o'clock the officers and directors of the Cement Products Exhibition Company formed in procession, and, headed by the band, marched to the Coliseum Annex, where President E. M. Hagar pronounced the first annual exhibition open in due form in a very graceful little speech, as follows:

"It is with pleasure that I greet you at the opening of our first annual exhibition. This occasion means a great deal to every one here, and to the most important industry in the world today.

"The cement manufacturers of this country are at this time giving more attention and encouragement to the proper use of cement than they are to the increase of consumption, for they realize that by the proper use of cement alone can the future growth of the industry be secured. The most important thing just now is the character of the work that is being done and is to be done.

"The object of this exhibition is to demonstrate to the public what can be done with cement when it is used correctly. This exhibition begun so auspiciously tonight is to be an annual event, and will have a tremendous influence in an educational way.

"All this represents the work of a few weeks in a most unpropitious season on account of the business condition of the country, and I believe that it is only a suggestion of what we shall see when all the signs of the business sky promises well."

THE ATTENDANCE.

The patronage of the exhibition was all that could have been expected.

Anyone who ever had the least doubt about the success of the Chicago Cement Show would have had every vestige of it removed by even a short visit to the Coliseum at almost any time after the opening day.

Not only was the attendance all that could be desired in point of numbers, but the character of the visitors was of a distinctly high order. It was not a mob of curiosity-seekers, but an assemblage of studious and well-to-do people—men and women of culture and refinement. The attendance represented all that is best in Chicago's citizenship—men of affairs, clergymen, educators, professional men, architects, contractors. The proportion of visitors from points outside the city was unusually large.

What is best of all, everybody was pleased—visitors as well as exhibitors. Not a shadow of the clouds which so recently crossed the business sky was even remotely perceptible. Exhibitors all concur in the statement that they never took so many direct orders or opened up so many avenues for prospective business at any similar exhibition. The First Chicago Cement Show, if it does nothing else, has at least proved that the clouds have rolled away and that the business of the country has once more begun to bask in the sunshine of general prosperity.

The opening session of the Northwestern Cement Users' Association was the principal feature on Wednesday. Two sessions were held, and besides the membership there was a large attendance of visitors from all over the United States.

Buyers were plentiful, and those who have been talking about financial stringency were entirely out of order. The cement show proved to be the harbinger of good times, and the purchases of machinery indicate that the buyers know where plenty of business is coming from.

Following its usual custom on similar occasions and carrying out its policy to aid in every way possible the growth of the most promising of the world's great industries, ROCK PRODUCTS issued regular daily editions during the continuance of the show. These were much appreciated by both visitors and exhibitors.

It is impossible to print all the many interesting lectures and papers which were delivered in the Coliseum annex. They were in themselves a liberal education in matters pertaining to the industry. Some of these are printed in this number in connection with the report of the Northwestern Cement Products Association and others will appear in future issues.

EXHIBITS AND EXHIBITORS.

The Contractors' General Supply Company, Chicago, showed a full line of contractors' supplies.

Theo. F. Koch & Co., Chicago, exploiting Wunner's Bitumen Emulsion, had a tasty booth in charge of C. H. Freeman and W. J. Thone.

The Atlas Portland Cement Company had on exhibition two fine plaques of cast cement. The full Chicago office force made things pleasant for their cause—T. M. Magiff, F. W. Clayton, John E. Evans and F. C. Bailey. At the back of the booth was a picture of the mammoth plant at Northampton, Pa., and the exhibit also comprised a number of works of art done in Portland cement.

The Whitehall Portland Cement Company had a booth where high art prevailed as the ideal. A lawn settee done in cement and a huge urn of antique design formed the principal features of the exhibit, and were among the attractive elements of the exhibition. Sales Manager Howard B. Green was in charge, assisted by Harry F. Rauch and E. C. Bacon.

The Chicago Builders' Specialty Company showed in their exhibit Youngstown metal lath and fireproofing steel and the Koehring mixer. The exhibit was in charge of W. J. Roseberry and H. C. Capron.

The Expanded Metal and Corrugated Bar Company, St. Louis, exhibited their reinforcing bars by means of illuminated pictures of the many buildings, bridges and other forms of reinforced construction in which their material has been successfully used. John Conzelman had charge.

The Condron & Sinks Company, Chicago, leading engineers, showed the Condron designs and plans of building and bridge construction. Both members of the firm were on hand and gave demonstrations to large crowds.

The United States Gypsum Company had one of the most unique exhibits of the exposition. It consisted of a miniature lawn in front of a bungalow covered with burlap sacks all bearing the brand "U. S. G. Co." The lawn was provided with settees and lawn vases filled with flowers. The staff in charge of the entertainment of the guests at this exhibit consisted of Messrs. C. C. Quincy, S. H. Beard, H. J. Schmaeger and S. Bartlett.

The Northwestern Expanded Metal Company exhibited columns, beams and other structural members of their system of expanded metal and rod combination, the booth itself being constructed of the hollow metal. The staff in charge of this exhibit are E. H. Jones, A. W. Rush, E. A. Rush, W. G. Bartlett and J. Brergel.

The Association of American Portland Cement Manufacturers, the parent of all cement and concrete organizations, had on exhibition the original drawings of the famous contest of architectural designs held this summer under the auspices of the association. C. Earle E. Bottomley was in charge.

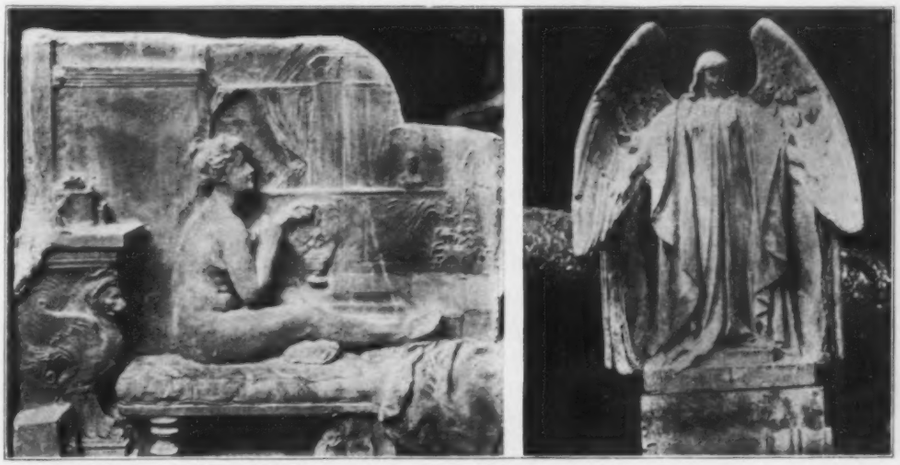
The Alpha Portland Cement Company kept open house all that time.

Schramke & Bennigson, Chicago, exhibited the line of dry mix machinery known as the Ideal brand.

The Miracle Pressed Stone Company had an exhibit of brick and block machines in charge of O. U. Miracle.

The Inland Steel Company, Chicago, displayed the various sizes of their high-carbon reinforcing bars.

The General Fireproofing Company, Youngstown, O., exhibited their lug bars for reinforcing concrete



EXAMPLES OF ART WORK DISPLAYED BY THE ATLAS PORTLAND CEMENT CO.

and also their pin-connected girder frames for concrete construction. They also exhibited a section of concrete roof made over herringbone lath, which is corrugated in lateral ridges. One-half of the model is concreted, while the other half shows the sheet metal employed in laying such a roof. It is one of the new developments of the year. This exhibit was in charge of O. C. Tobin and S. A. Smith.

The booth of the St. Louis Portland Cement Company boosted Red Ring cement.

George De Smedt, Chicago distributor of the "Vulcanite" brand of Portland cement and agent for Dehydratine waterproofing and ornamental concrete tile, had a very tastefully arranged booth right in the center of the Coliseum which attracted no little attention.

The American Steel and Wire Company, Chicago, displayed an entire system for reinforcing concrete, consisting of a wire netting made of light-weight steel bars connected with continuous wire. Column and beam members were shown by bending the sections of the fabric, which turn like a hinge at the corners. One triangular-shaped section was shown supporting a suspended keg of nails to display the rigidity of the material. Mr. Doyle, who is the chief of reinforcing material, was not in charge of the booth.

The Decorators' Supply Company of Chicago, exhibited a fireplace and mantel made of reinforced concrete which is really a work of high art—a radical departure from the usual styles of design in concrete usage.

The Wolverine Portland Cement Company, Coldwater, Mich., conducted a continuous reception in a parlor replete with cotton cement bags duly branded "Wolverine." Sales Manager C. H. Wood had charge, assisted by C. H. Cobeen.

The Cleveland-Akron Bag Company, well-known manufacturers of paper bags for the use of the cement manufacturer, had an elaborate exhibit, displaying upon a huge screen a large number of the printed bags carrying the brands that have made the cement industry famous in all parts of this country. C. W. Wright, W. M. Whaley, F. D. Ross and E. J. Warner dispensed the honors.

The General Electric Company, Schenectady, N. Y., displayed a large number of new electrical appliances particularly adaptable to use in the great plants where cement is manufactured. Their enormous power circuit arc lamps illuminated one end of the Coliseum. F. M. Boyer, the Chicago representative, had charge.

The Ætna Powder Company, Chicago, who supply the cement quarries with explosives for blasting out the great quantities of raw material, naturally do not keep a large supply of these commodities on hand for the promiscuous handling of the public. The reception committee consisted of G. A. Allen, G. H. Keys, W. J. Austin, W. G. Harrington, E. N. Hawley, W. L. Schuette, F. W. Hoyt, C. M. Sherman.

The Sterling Wheelbarrow Company, Milwaukee, had a complete line of wheelbarrows for contractors.

Thomas Prosser & Son, New York, exploited the Krupp grinding machinery, which is used by a large number of the cement manufacturers, Horace Haight was in charge.

The Iowa Building Block Machine Company of Waterloo, Ia., was featured by J. L. Shannon. Models were used in the demonstrations and proved very interesting to all visitors.

The Ford System fence post was demonstrated by J. J. Luck of Aurora, Ill.

The Knickerbocker Company, Jackson, Mich., demonstrated the merits of the Coltrin mixers. Mr. Knickerbocker had charge. We noticed he was surrounded by eager listeners and hope each individual indicated an order.

The booth of the Sandusky Portland Cement Company was crowded to capacity at all times with visitors eager to see the new white Portland cement and specimens of their product. The display was in charge of S. B. Newberry, F. J. Morse and R. R. Fish.

The Cement Tile Machinery Company, Waterloo, Iowa, displayed a tilemaking machine which created an immense amount of interest among visitors. The booth was in charge of J. H. Stewart.

The booth of the Elk Cement and Lime Company, Elk Rapids, Mich., presented an attractive appearance with its illuminated elk antlers and otherwise neat and well-arranged displays. Open house was kept here and all friends were assured a hearty welcome. The booth was in charge of C. A. Whyland, assisted by Frank Banks and Buster Brown.

The product of the McIlroy Belting and Hose Company was well displayed in a large booth. They demonstrated a line of belting for use in cement plants and showed several different styles of their product. At this booth F. B. McIlroy and L. Cole had charge.

The Anchor Concrete Stone Machine Company of Rock Rapids, Iowa, displayed a line of their machines; also a section of block wall made by their machine. This booth was in charge of C. W. Bradley.

The display of the Twentieth Century Tile Roofing Company, Rochester, Mich., consisted of a working demonstration of cement shingle making, under the Satterley patents. This exhibit was under the direction of Mr. Diamond.

The Lansing Wheelbarrow Company, Lansing, Mich., showed a line of wheelbarrows for use in handling cement and concrete work. The line is quite extensive and covers every need. H. H. Ames had charge at this booth.

The Chicago Portland Cement Company, showed samples of their product in different stages of manufacture; also a large medallion mounted on a pedestal made of the Chicago product. Photographs of buildings in which this brand of cement was used were also shown. The booth was in charge of W. F. Main.

A large display of wire and reinforcing metal was displayed by the F. P. Smith Wire and Iron Works. The booth was constructed of this material and represented every necessity in the field. At this booth were found F. P. Smith, W. B. Smith, Mr. Josslin, Mr. Black and H. G. Welsh, president of the Estimators' Club.

The Universal Portland Cement Company, Chicago and Pittsburg, held a levee at their parlor booth. President E. M. Hager of this company is also president of the exhibition, and B. F. Affleck and the entire selling force made up the welcoming line. There were B. H. Rader of Pittsburg, J. C. Van Dorn of Minneapolis, Edward Quebbeman of St. Louis, with all their lieutenants. These headquarters were among the busiest spots in the building.

Robert W. Hunt & Co. displayed an interesting exhibit in their laboratory apparatus and what knowledge could be obtained through such experiments. J. E. Moore had charge of this booth, assisted by a large corps of assistants.

The booth of the American Hoisting Machine Company attracted much attention with their working models of hoisting apparatus. A ten-foot platform supplied with a hoisting machine in operation demonstrated what could be done in this line of construction work.

The New Enterprise Cement Machinery Company exhibited a style of concrete construction away from the ordinary work. Their ideas are exploited in a working demonstration and are explained by A. J. Stoecer, assisted by W. B. Rogers.

F. P. Van Horn exhibited the Usona bag crate for returning empty cement bags to the manufacturer, and the Usona fence post.

The Star Cement Block Machine Company, Dallas City, Ill., exploited their new block machine, and N. M. Yeocum explained the peculiarities of its workings and showed the advantages of this model.

Charles Wesley, Chicago, displayed his ingenious "Economy" laundry tubs made of reinforced concrete. They are both waterproof and everlasting.

The Ironite Company, Chicago, who manufacture a waterproofing compound for concrete commodities, had a demonstration of non-absorption which is truly convincing. John M. Raushaft, the demonstrator, was assisted by Mr. McCreedy.

The Standard Asphalt and Rubber Company, Chicago, showed the merits of their system of waterproofing mass concrete for almost every purpose and under every possible condition. Harry Tipper had charge.

The Inman Concrete Building Block Machine Company, Beloit, Wis., exploited their block machine and showed a number of fine samples of the product.

The United States Standard block machine, made at Ashland, O., by the Ashland Steel Range and Manufacturing Company, was on exhibition. A. J. Bentz and U. S. Shelly were on hand to greet the troops of visitors and show the merits of the machine.

A working demonstration of the reliability and simplicity of the Thomas system of cement block construction was conducted at the Thomas booth. These exhibitors were enthusiastic over their product and kept open house to all interested in cement blocks. Mr. A. N. Porter was in charge of operations.

A booth decorated with its exhibitors' output was that of the Conrad Concrete Stone Company. Around their quarters were displayed a number of patterns of cement stone made from the sand quarries of the Conrad Company, Conrad, Ind., and the center of the booth was adorned with a large table made of the same material. Mr. A. W. Meyers, the local representative, and P. M. Conrad had charge of this booth.

The United States Reclamation Service distributed some interesting literature and also exhibited some fine photographs bearing on the subject.

The Gross & Treadway Company demonstrated the Eureka mixer together with Mr. Kelly.

Thomas M. Morgan of Westmount, Quebec, Canada, demonstrated his burning attachment for cement kilns. It directs the burning like a whirling spray against the sides of the revolving tube.

Billings & Co. of Chicago showed how flint pebbles were used in tube mills and where they came from.

The Ideal Motor Company of Lansing, Mich., exhibited a 1½ and 2-horsepower gasoline motor especially designed for concrete mixers. C. I. Smith had charge.

The working model of the automatic tamper shown by J. L. Shannon, Waterloo, Ia., excited much attention among the block men. The machine stands eight feet high and has a capacity of 700 to 1,000 blocks per day.

The principal display of the Garden City Sand Company was "Stonekote," which is the new Portland cement exterior. The merits of this material were extolled by S. W. Curtis and Charles M. Rose. Mr. Binswarger of this company was also on hand and gave waterproof paint demonstrations.

The exhibit of the Lehigh Portland Cement Company consisted of Fred Paulson and B. Z. Swett. These two popular young men held open house all the time, and they were the busiest at the show.

J. K. Jensen had charge of the Janesville Cement Shingle Company. He had on exhibition a machine for making cement shingles. The mold forms its impression on both sides simultaneously on this machine.

At the E. O. Heinsdorf exhibit the Minnesota gravity carrier was demonstrated by a large force, with W. W. Etzbach in charge. The exhibit attracted large crowds daily.

The H. B. Morgan Company of Chicago demonstrated the merits of their waterproofing.

The Continental Car and Equipment Company of Louisville, Ky., exhibited a large car used in quarries. Their exhibit was in charge of William Fuller.

The D. A. Post Mould Company, Three Rivers, Mich., showed their unique fence-post molding device.

The Parker Hoist and Machine Company, Chicago, famous manufacturers of quarry derricks, exploited their indispensable supplies. The exhibit was in charge of F. H. Parker, A. E. Parker and H. L. Parker and attracted considerable attention.

The Cement Spade Company, Chicago, exhibited for the consideration of concrete contractors their patented spade. C. A. Butler was in charge.

Mandt & Newmage, Stoughton, Wis., exhibited the Mandt triangular-shaped concrete block and the machine for its manufacture. W. G. Mandt was the demonstrator.

The Emerson Steam Pump Company, New York, exploited their well known pump through the engaging personality of C. H. Olmstead.

The Rockford Sand and Gravel Company, Rockford, Ill., had an interesting and convincing argument with regard to concrete aggregates in the shape of sample jars of sand and gravel. S. A. Gibson had charge.

The Nebraska Concrete Reinforcing Company, Omaha, Neb., showed their system of providing the tensile qualification for concrete construction. The exhibit, in charge of George Barker and W. D. Owens, attracted many visitors.

The Concrete Stone and Sand Company, Youngstown, O., exhibited a large collection of fireproof structural tile of concrete. This is a 1907 invention and one of the most important features on exhibition. The exhibit was in charge of the inventor of this material, A. A. Pauly, assisted by M. Fleming, P. F. Jones and Charles Connell.

The Diamond Cement Machinery Company, Deshler, O., exhibited a section of roof covered with Diamond cement shingles, the machine for the manufacture of which the exhibit was designed to exploit. This booth was in charge of D. A. Hackenson.

The McKelvey Machinery Company exhibited contractors' machinery and tools, industrial cars and brickmaking machinery. The mammonth McKelvey mixer attracted much attention among all classes of visitors. J. N. Korhumel had charge of the exhibit and was always looking for visitors desirous for information. His winning ways and pleasant address was not to be overlooked.

Aside from their display of large castings and their line of foundry machine work the Bethlehem Foundry and Machine Company had a novel souvenir. E. J. Steltz was found at this booth with a "glad hand extended" and said, "Will you have a cigar?" handing out a perfect facsimile made of cast-iron and colored in the natural tints.

The Monolith Steel Company, Inc., Washington, D. C., displayed a line of expanded metal and reinforcing steel for column work. The booth was in charge of John F. Golding, who expounded the merits of his product.

A novel exhibit and one that attracted much attention was that of the Marquette Cement Manufacturing Company. A miniature concrete block house, made of Marquette cement, was displayed. This structure was mounted on a platform about four feet high, on which was a reproduction of a lawn surrounding the house. The model is accurate in its details of construction and drew the attraction of many feminine eyes. The booth is in charge of G. Williams, assisted by W. H. Eccles, John Durlap, George Henderson, G. S. Everingham, A. A. Sheneberger and J. Burgh.

The Edmondson Concrete Machinery Company, South Bend, Ind., made a number of four-inch concrete veneering blocks on their block machine, to the edification of a large crowd of interested spectators. It was one of the few demonstrating exhibits. W. G. Elliott, O. L. Dodds and J. S. Moore had charge.

The Wire Specialty Company, Chicago, had on display a line of wire commodities of special interest to concrete contractors as well as engineers. Those in charge were G. B. Street, K. P. Boulton and P. O. Wadsworth.

Somers Bros., Urbana, Ill., showed their new concrete block machine. Ed. and F. Somers demonstrated the advantages of their invention.

A. J. Cropp, Chicago, displayed for the first time his concrete mixer.

The Allis-Chalmers Company had a booth set apart for the entertainment of their friends, where crushing, grinding, pulverizing and every other kind of equipment were in order. The entire force of the Chicago office resolved itself into a reception committee, consisting of L. St. J. Smith, A. W. Carter, H. Shaffin, P. Van Zant and J. W. Gardner.

The Chicago Concrete Machinery Company had their mixer in operation. The exhibit was in charge of T. M. Meek.

The Burrell Manufacturing Company, Bradley, Ill., had an attractive exhibit of cement users' tools of all kinds. W. C. Burrell kept busy explaining the uses of the different queer-shaped implements of polished brass and bronze.

The Williams Patent Crusher and Pulverizer Company, Chicago, had a booth, where they entertained in particular those who were interested in crushing machinery. M. J. Williams had charge.

The American System of Reinforcing, Chicago, showed a complete system for placing the steel in columns and beams. The spiral wrapping of perpendicular rods to make the columns attracted much attention. W. A. Collins and A. A. Clement had charge.

The Architectural Decorating Company, Chicago, showed a very attractive line of decorative features for the embellishment of porches and both exterior and interior ornaments. Several classic models of Pan, about life size, made suggestive decorations for Italian garden ideals. Chris Dod was on hand to further explain the attractive line of work they have developed.

The Janesville Cement Shingle Company, Janesville, Wis., showed a sample section of roof made of their corrugated cement shingles. These shingles are much lighter than clay tiles and fit very snugly. The machine upon which these shingles were made is very simple indeed.

The Chicago Architectural Photographing Company showed the first display of such goods at a cement show. A large number of photographs of buildings, particularly concrete buildings, hung around three walls of the inclosure. It was one of the very attractive booths. E. L. Ericson was glad to talk picture-making to all visitors, and he did it well.

The United States Cement Company, Bedford, Ind., exhibited a model of the famous Riverside Park bridge at Indianapolis, Ind., also a well-arranged pyramid of their Bedford cement surrounding two large cement medallions draped with the American flag. This model was loaned to the United States Cement Company by the Indianapolis Park Board. The booth was presided over by Capt. F. S. Clark and a corps of assistants.

One could hardly pass the Meacham & Wright Company's booth without interviewing genial C. G. Reid. His happy smile and hand of good friendship extends some distance. This display covered all the Meacham & Wright output. Messrs Foster and Sullivan also helped dispense hospitality and both F. S. Meacham and Col. Frank Wright spent much time at the show.

The Cement Machinery Company and Cowhan System of Independent Plants was in charge of S. L. Wiltse. The exhibit comprised cement block machines and other cement-working tools, also an artistic array of samples and packages from the Independent plants. Others in the booth were J. W. Shore of the Peninsular, A. T. MacClaren of the Western States, and George P. Dieckman.

The Western Electric Company displayed a comprehensive line of their product, among which were motors, dynamos, electric fans, arc lamps, etc. J. H. Gleason had charge, assisted by an able corps.

The Alling Construction Company exhibited their system of reinforcing. V. W. Alling was in charge and demonstrated the merits of the system to interested visitors.

The R. Z. Snell Manufacturing Company, South Bend, Ind., exhibited their line of mixers. Mr. Snell was in charge of this exhibit.

The exhibit of the Multiplex Concrete Block Machine Company, Toledo, Ohio, contained several different models of their product, also a specimen of wall showing different faces and modes of bonding. The booth was in charge of Messrs. Teets and Dawson, who alternated in their mode of attack.

A specially well-arranged booth was that of the Newaygo Portland Cement Company, exhibiting specimens of their product. This was probably due to the artistic touch of a feminine hand, for Miss V. Bacon was interested in this particular display. L. W. Cheney presided, assisted by J. C. Lockley and Superintendent Bell.

The Arthur Koppel Company exhibited a line of quarry cars in a well-arranged booth. They also showed sections of trackage used in quarry transportation. The display was in charge of Otto Plessner, the local manager, and O. T. Christerson.

L. V. Thayer, president of the Peerless Brick Machine Company, was in charge of their booth. This display consisted of brickmaking machinery and a good assortment of their cement brick.

THE MEN BEHIND THE BIG SHOW.

The growth of the cement industry is due primarily of course to its recognized worth, but largely also to the progressive methods employed by the cement manufacturers to educate the trade as to the possibilities of their product. This was the excuse for the First Annual Cement Show in Chicago, which was born in the home of the manufacturer and grew under his energetic efforts. The exhibits should be a lesson to the layman who is really interested in construction in any form, and after running the gauntlet of the exhibits, he should have the foundation for discussing with the architect and contractor the merits of cement construction.

The original meeting of the executive board that made this exposition possible found the faithful present, and they are still active. Of that number we have found President E. M. Hagar, one of the youngest men connected with the industry, and altogether successful because of his business acumen, and it would not be fair to close the account of this exposition without paying tribute to this young man of the West. His co-worker in this cause, N. D. Fraser, vice-president, is one of Chicago's most successful business men. Mr. C. H. Wood, secretary and treasurer, is one of the active sales managers connected with the cement industry. B. F. Affleck, J. U. C. McDaniel and William Dickinson, of the executive committee, are all busy men, but it is to these gentlemen that we can take our hats off, for they have furnished the enthusiasm and the hard work, and they were the volunteer corps that backed the show, and not only created the ideas, but put them across.

The other directors are among the best known men in the West connected with the cement industry, namely: D. McCool, president and treasurer of the Newaygo Portland Cement Company, Newaygo, Mich.; A. St. J. Newberry, president Sandusky Portland Cement Company, Sandusky, Ohio; E. W. Shirk, president United States Cement Company, Bedford, Ind.—all men of energy, with whom it is a pleasure to work.

While the time for preparation was limited, no apologies for the first annual Cement Show of the Cement Products Exposition Company are necessary. ROCK PRODUCTS is convinced that there has never been a series of exhibits in any other trade which contributed more to the success of an industry than this one did.

The Northwestern Association.

A Good Attendance and an Interesting Program —The Members Delighted with the Big Show.

The members of the Northwestern Cement Products Association were everywhere in evidence on the second day of the great Cement Show, but in view of the difficulty of obtaining a full attendance of the membership in any one place during the morning hours President Stover had the meeting deferred until 2:15 p. m.

President E. M. Hagar of the Cement Products Exhibition Company cordially welcomed the members, and among other things he said:

It may be interesting to you to know that we started proceedings looking toward this show only some few weeks ago at a time when, I must confess, the financial outlook discouraged me not a little. My hopes, however, rose correspondingly with the interest manifested by all those approached on the question, and with the attendance of last evening and that of today; people who are not attending out of idle curiosity, but to the contrary, thoroughly interested in every exhibit—the results show far beyond my expectations.

I think this is an indication of what the West can do. We had the date set for the exhibition here and we had to make it go. A number of gentlemen put their shoulders to the wheel, and I believe it is more of a go because your convention is held in conjunction with it. I was told last night that if the Eastern manufacturers knew exactly what we have accomplished here that it would take them about two years to have a cement show of like character. In this I thoroughly agree, and right here I would call attention to what we have done in the West in a few weeks and ask what will be the result in the next few years of an industry which has the backing of Western hustle and energy. With the thought of giving honor to whom honor is due, I want to state that Mr. McDaniels, Mr. Affleck and Mr. Wood deserve a great deal of credit, as these gentlemen have been untiring in their efforts toward making the show a success.

It is passing strange that I should have the honor of addressing you gentlemen, for the reason that while I am not a cement block manufacturer, I am very close to it. When we were shipping cement to Havana, Cuba, some years ago, we sent, at the request of our agent there, a cement-block machine, the second one made in the United States.

Later (because our salesman, while a good one, had the happy faculty of holding on to our money) I was obliged to go to Havana and take possession of all the property that we had there. Among the remains was the block machine, and I was obliged to run that machine for a time in order to try and get some of our money back. You can all realize, therefore, that I have a practical knowledge of the difficulty that confronts the cement block man in the introduction of his material, especially in a foreign country.

As a Portland cement manufacturer, speaking for them, I want to say that the growth of the Portland cement industry of the future does not depend upon the manufacturer. I think you will agree with me that most of the manufacturers of this country now manufacture a product that is of high-class quality. It is now up to the users of cement to say what the consumption will be. There has been some poor work done with concrete and reinforced concrete, due to ignorance, and in some instances negligence, but if we work from this time forth with the idea that nothing but our best work will be placed in the many forms of construction, these few failures will be forgotten. But we must bear in mind that we cannot afford to be careless, nor relax our vigilance in any one instance, because there are manufacturers and others interested in other characters of building materials who are awaiting with eyes and ears open for the slightest failure, the slightest slur on concrete, in order to use it as a blow against our material, which has proven so wonderfully worthy of the confidence we have given it.

To my mind, the Northwest is the country in which the very best of concrete and reinforced concrete work is done today. This is not the only good quality of the Northwest—it is the place where the most money is to be found, and it is in this particular section that the great growth of the use of cement in its many forms will be found in the years to come. Personally, I am glad that I live in the Northwest, rather than in some of the other sections with which I am acquainted.

In his response, Col. Lee Stover said:

This Cement Exhibition is to be a permanent feature, a business investment for the purpose of advertising and selling the product of the manufacturers of Portland cement. Notwithstanding this fact, they have extended a most courteous invitation to this association, and I believe we have made no mistake in making this selection for the place of our annual convention.

The words of welcome of their president are more than equaled by what they have shown us in a tangible way in the exhibits of raw material used in the manufacture of Portland cement; the various appliances and delicately-adjusted scientific apparatus for its proper testing and the proper mechanical forms and appliances with which to make it in its various forms for construction, and it is to view this practical demonstration, I take it, that the majority of us are here.

It is a pleasure to any Western gentlemen to visit the city of Chicago, and it is an extreme pleasure to be extended the courtesy evidenced and to be afforded the opportunity to see for ourselves in practical shape that which a great many of us know only by technical treatment—to see the wonderful appliances that have placed this stupendous American industry in the position it now holds in the world's progress. Mr. Hagar, on behalf of the Northwestern Cement Products Association, I thank you for your welcome, and I return to you our heartfelt thanks. If you progress in the next twelve months as you have in the last few short weeks it is really impossible to conceive what will be the result in the next few years.

Next in order was the president's annual address, which was received with great applause and listened to with intense interest.

The next paper read was "The Status of the Cement Industry in Iowa," by R. G. Coutts, Grinnell, Iowa.

The most interesting lecture of the afternoon and one that was replete with educational features was that of Richard L. Humphrey, president of the National Association of Cement Users. The preëminent position that Mr. Humphrey occupies in the expansive field of cement and concrete and their uses was exceedingly well expressed in the introductory remarks of Col. Lee Stover, viz.:

"If there is an authority in this or any other country on concrete, it is Mr. Humphrey. He is president of the National Association of Cement Users, who meet at Buffalo next month, and is the immediate personal representative of the United States Geological Survey Testing Station at St. Louis. I consider Mr. Humphrey *the authority.*"

While the story of the San Francisco earthquake and its attendant horror will go down in history as a dreadful calamity, lessons of this character are not thoroughly learned, and it was with this theme as his text that Mr. Humphrey concisely made clear to his audience the imperative necessity for care in concrete and reinforced concrete construction. The stereopticon views were most forceful in their illustration of the wreck and ruin which must of necessity follow the criminal negligence of the builders of some so-called fireproof edifices. Every member of the association present will carry away an impression of what it means to follow the straight and narrow path only, and the thorough and earnest manner in which Mr. Humphrey emphasized the dangers to be avoided in the use of concrete in its many forms has been firmly planted in the breasts of the men from the Northwest.

Mr. Humphrey's audience was most attentive and the many views of the havoc and damage wrought by the earthquake in the city of San Francisco and the territory adjacent were most vivid, especially the slide picturing the collapse of a huge building in the city just at the moment at which a drove of cattle were passing.

EVENING SESSION, DECEMBER 18.

"Concrete in the Pabst Country Place at Oconomowoc" was the title of Mr. R. E. Newton's paper. This lecture was most edifying and instructive, illustrating the many forms of residences, pergolas, stables and other edifices, all constructed with concrete and reinforced concrete. The speaker was clear in placing before his audience the various stages of the respective works from the foundation to the finished job.

The President: The next gentleman on the program is one who has done a great deal for the concrete industry, Mr. F. L. Simmons, president of the Lincoln Park Board, Chicago.

"Concrete in Lincoln Park, Chicago," was the subject of Mr. Simmons' talk, which in substance was as follows:

The subject which I am to talk on is one with which you are all generally familiar, but I also want to tell you that you are welcomed here by the Association of Commerce and in this association we have a "rich mixture." We have a great deal of "sharp sand," and the result is a "concrete" body which welcomes you with "cementing" friendship.

I desire particularly to talk of our wonderful beach on the water front of Lake Michigan. This lake is absolutely feminine in her caprices. When she is docile she is the most perfect and charming feminine specimen that man can think of, but when disturbed by the north winds her depredations on the shore create havoc and ruin. The first wall that was built along the Drive many years ago was one of our first works of concrete. We had occasion to take it down after a part of it had fallen, and even though the mass was composed of broken bricks and every conceivable matter that could enter into the mass, yet we found in drilling this that the drill would only penetrate a short distance, and we were finally obliged to dynamite it. We laid our blocks in sections 8, 9, 10, 12 feet long. Later we had occasion to try to move one of these stones, and I assure you it was no dream. The city of Chicago is quite proud of this wonderful beach of ours, because while we have heard of seawalls and concrete piers and other forms of construction to prevent the encroachment of the waves, never have I seen a beach which is so ideal for its protective qualities and so artistic to the eye. I want to say that probably no greater blessing has ever come to us for public utility than concrete and reinforced concrete. We now have foundations prepared for what I believe is the finest concrete bridge in this section, a 100-foot arch across the lagoon, and the next time, Mr. Chairman, that your association meets here, as I hope that it always will, we will take you a walk up that beach or an automobile drive through that park in order to show you the walls, sidewalks, public service stations and every conceivable form of concrete construction. There is also a crematory for the burning of refuse in the park, all so completely arranged that within twenty-five feet of it you would not know it was there, and I believe that, even with the progress we have made in the recent two or three years in concrete construction, ten years from now we will have a complete transformation and that the sight of a wooden building will be as unique as concrete now is.

Heart-to-heart talks by all the members of the association, presided over by Colonel Stover, concluded the proceedings of the evening. Curing by steam and the vapor process as applicable to the curing of concrete blocks was thoroughly gone into, and the necessity of absolute crystallization of the water and cement in the mass before the finished product should be allowed to go into any work was the point of much emphasis.

MORNING SESSION DECEMBER 19.

Thursday morning's meeting was opened by Mr. A. B. Pederson of Hankinson, N. D., with an able address on "Construction of Cement Sidewalks." Mr. Pederson's talk was one that was particularly interesting, especially to the man on the job.

"Forms" was the title of Ernest McCullough's lecture, which was treated in a clear-cut, concise manner, profusely illustrated with stereopticon views.

The salient features of Mr. McCullough's talk were to the effect that forms are the most important item entering into concrete or reinforced concrete construction. He brought out clearly the danger of employing "wood-butchers" instead of men thoroughly learned in the carpentry trade for the making of forms, and also the necessity of having the draughtsman acquire actual physical experience in the working of concrete in its many forms before attempting to make plans for any contemplated work.

It was especially pointed out, too, that forms should be figured by the square foot and not by the cubic yard, in order that the contractor at the completion of any particular job would come

MARTIN T. ROCHE,
President Northwestern Cement Products Association.

out somewhere near his estimate instead of at a loss as had been the case in many instances under his supervision. Cheap labor, so far as the making of forms are concerned, was also to be tabooed, as an intelligent carpenter worth good wages would be a saving in the long run.

AFTERNOON SESSION, DECEMBER 20.

The afternoon session, at 2 p. m., was opened by a gentleman who is the recognized authority on cement blocks in this country, and whose articles on this important subject have been read by every manufacturer having to do with this form of cement and concrete work—S. B. Newberry.

Every man in the auditorium listened with intent interest on all that Mr. Newberry had to say, and his address, without a single superfluous word, was greeted with applause.

The buildings of the Sandusky Portland Cement Company, which are built of concrete blocks, were described in detail, and the cost of 16-inch blocks in an 8-inch wall was stated to average 7 cents each, or from 10 to 12 cents each laid in the wall. A mixture of gravel, screenings and broken stone as an aggregate, in the proportion of 1:2:5, was suggested as one that would be conducive of the best results, and considerable stress was laid upon the guarding against the use of fine sand in the manufacture of a satisfactory block. Enough water should be added to the mass so that the block or brick should reach the stage practically preliminary to sagging while on the pallet. In other words, sufficient water to thoroughly crystallize the cementitious material should be used in the first operation of block or brick manufacture. Steaming or hot vapor curing was a ticklish experiment, and one that required a great deal of care in its practice, because steam pressure was likely to cause the ultimate disintegration of the material under treatment.

Hydrated lime could be advantageously used to increase the plasticity and reduce the porosity of the mass, and while this material was usually used to the amount of one-quarter the amount of Portland cement in the block, it could also be used to very nearly 40 per cent of the cement proportion with safety.

L. L. Bingham, of Estherville, Iowa, read an interesting paper on "General Uses of Cement Pipe," and the figures cited of the many acres of land to be irrigated in the United States alone will open up a market which, while not a new one, is not generally counted on as a large cement-consumer.

EVENING SESSION, DECEMBER 20.

In the open discussion, a question was asked Mr. Bingham as to how a Y or T joint could be made to be used in making connections with cement pipe. Mr. Bingham had made no experiments in this line nor had he done any practical connection work, and the question was referred to J. P. Sherer of Milwaukee, who replied briefly as follows:

"In cement sewer pipe I have found that the best method and the most simple is to bore a hole in the damp cement, and in making a joint to simply make a paste of neat cement and sand and wipe the joint similar to the manner in which the plumber wipes a lead joint. This answers the purposes admirably."

Preceding the very excellent paper of C. A. P. Turner of Minneapolis on the "Advance in Reinforced Construction," he said: "I see here in this meeting-room this afternoon some of the disadvantages of timber construction. Now, if this room were built of reinforced concrete. I think we all would be able to hear the various readers a little better."

While F. A. B. Paterson of Fairmont, Minn., opened his talk on "Cement Pipe as Used for Drainage and Irrigation," which will appear in full in a later edition of ROCK PRODUCTS, with the remark that brevity is wit, his talk was concise and to the point, and was an agreeable addition to all the papers that had gone before on the many and varied uses for cement and cement products.

"The Concrete That Made Milwaukee Famous" was the title bestowed upon the talk requested by J. P. Sherer of Milwaukee. The use of cement pipe in Milwaukee alone, dating back to the use of natural cement, a business that has increased from $5,000 to $100,000. There are now about 220 miles of cement pipe in use in the city of Milwaukee, placing that city in the front rank of well drained cities of this country.

Mr. Sherer's talk concluded the papers as per program.

Before the final adjournment of the meeting Charles L. Johnson of the Castalia Portland Cement Company, in a very manly speech, explained for the benefit of the meeting the exact conditions under which he attended the last meeting of the association at Minneapolis and brought out quite clearly the fact that his talk covered his knowledge of general conditions of the trade as he knew them in the States of Pennsylvania, Ohio and Indiana; that if his statements at that time were not applicable to the conditions as they existed in the Northwest, this was due to his ignorance of the real conditions in a territory with which he was not familiar.

Mr. Johnson also spoke of the Association of Sales Managers of the Portland Cement Companies of the United States, and the good it would endeavor to do in furthering the general conditions of the trade.

The final session of the convention of the Northwestern Cement Products Association was held at 8:30 p. m. at the Lexington Hotel, Twenty-second Street and Michigan Avenue.

The reports of the secretary and treasurer were duly received and filed.

Resolutions of thanks were tendered the Commercial Club of the city of Minneapolis for their offer to the association to hold their annual meeting in that city, and also a motion of thanks was tendered the Cement Exhibition Company for the kindness and courtesy afforded the association.

The following officers were elected to serve for the ensuing year:

President—Martin T. Roche, St. Paul, Minn.

Vice-presidents—O. U. Miracle, Minneapolis, Minn.; Henry E. Murphy, Manitowoc, Wis.; C. A. P. Turner, Minneapolis, Minn.; O. H. Laughlin, Lisbon, N. D.; Lee Stover, Watertown, S. D.

Secretary—J. C. Van Doorn, Minneapolis, Minn.

Treasurer—J. M. Hazen, Minneapolis, Minn.

The time and place for the next annual convention was left with the executive committee and officers of the association, with instructions that it shall be held in the Northwest.

From Our Own Correspondents

CLEVELAND AND NORTHERN OHIO.

CLEVELAND, O., Dec. 18.—Cleveland will smash its building record for the year just closing. While the effects of the money shortage will be more seriously felt next year, there has been little curtailment of work already under way, which has either all been finished up by this time or is still being worked on. The new record will result from the abnormally large volume of public building. For last month 473 permits were issued aggregating $870,000, as against 661 permits a year ago, aggregating $808,000. Of the permits last month twenty-six were for buildings valued at $540,000.

The County of Cuyahoga, of which Cleveland is the county seat, will next year build a very large single-arch concrete bridge. County Engineer Lea has been making an investigation of concrete viaducts. The new concrete bridge will cost upward of $250,000. It will be sixty feet wide, three times the width of the present wooden structure, and about 300 feet long. It is aimed to cover this distance with a single span. Besides the mammoth central arch there will be smaller spans at the approaches at either side of the ravine. Plans are already drawn and work will commence in the spring, as the county already has the money for the improvement. Engineer Lea says that no reinforcement of steel will be used in the structure, as there will be no direct tension. Each side of the big arch will be braced against the solid rock sides of a ravine 125 feet deep. The highest structural value of concrete is its incompressibility, and concrete in compression alone is the engineering feature of this bridge.

The $2,000,000 Hippodrome, one of the finest theaters in America, is slated for opening Christmas eve. During the past month scores of plasterers and decorators have been hard at work on the interior of the building, getting it ready for opening. The stage will accommodate a two-ring circus, while the auditorium seats 4,500, three times as many as any other theater in the city. In addition to the theater the same project involves a twelve-story office building facing Euclid Avenue and a seven-story office structure facing Prospect Avenue, foyers being set through these buildings as entrances to the theater. Many improvements over the New York Hippodrome have been made. The office buildings will be finished up shortly after the new year. Lime and plaster were supplied by the Kelly Island Lime and Transport Company, while brick and other finishing materials were provided by the Cleveland Builders' Supply Company and the Masons' Supply Company.

Thirty-four miles of Cleveland streets have been paved this year, as against twenty-six a year ago. About $110,000 has been spent by the city. Next year it is planned to let 206 paving contracts and spend $150,000 on paving-work. Owing to a shortage of paving material a number of streets will have to go over to next year. The city authorities say they will sacrifice other improvements for new pavements and sewers.

One of the building projects to be proceeded with first thing next spring for which the money will be forthcoming without any trouble will be a new West Side Library building. Money was donated by Andrew Carnegie several years ago for several structures, but the West Side building has not yet been begun, though a fine section of park has been created to receive it. The building will be triangular in shape, with an auditorium in the basement which will seat about 1,000 people. Bids are to be solicited in January. Communications may be directed to Librarian Brett, Cleveland.

Considerable money is to be spent by Cuyahoga County next spring on new pavements for country roads, it having been decided to spend about $275,000 on brick turnpikes. Thirteen miles of pavements will be laid in the rual districts.

It has been decided to revise somewhat the present building code of the city, which was compiled and put into force about a year ago. Many builders declare that the provisions of the code impose a hardship on them and that they are unnecessary. The Building Inspector is also to be given power by a State law to tear down ramshackle tenements.

W. H. Hunt, ex-president of the National Brickmakers' Association, has gone to Europe for a four-months' visit to pick up ideas on the subject of municipal art. Next month in the Ohio Legislature a bill is to be introduced providing for art commissions in the cities of Ohio. Cleveland will be one of the first municipalities to take advantage of this law. When at home Mr. Hunt is manager of the Cleveland Hydraulic Press Brick Company.

Announcement has been made by the officials of the American Steel and Wire Company that work on the new $1,000,000 fireproof mill will go on during the winter, so that it may be ready for use June 1. Millions of shale brick and tons of cement are to be used.

The cement business is practically at a standstill in Cleveland, as it always is at this season.

THE TWIN CITIES.

MINNEAPOLIS, MINN., Dec. 18.—The building situation is largely *in statu quo*, and will likely continue to remain so until after January 1.

There has been a slumping and an easing off in prices of many materials, which should serve as an encouragement to those who have held off. The only trouble will be that such people frequently anticipate continuous declines, whereas the situation does not call for them. There will unquestionably be an easing-off in labor wages. Already there are no premiums being paid and it is not so hard to get men as it was a short time ago.

The Peerless Brick Company of Minneapolis have won a verdict in a suit for infringement against the Miracle Pressed Stone Company of Minneapolis.

The Kettle River Quarries Company of Minneapolis have been awarded a contract for six stone piers of Kettle River sandstone for the new bridge which the Chicago and Northwestern Railway will build across the Mississippi River at Clinton, Iowa.

Congratulations are being extended to J. C. Van Doorn, the Northwestern representative of the Universal Portland Cement Company in Minneapolis. Mr. Van Doorn was married recently in St. Louis, to Miss Hattie B. Bailey of that city. They will make their home in Minneapolis.

Edward H. Barrett, who was with the old Asbestine Stone Company in Minneapolis and a pioneer in cement stone work, died recently, at the age of 89.

The Minnesota State Association of Builders' Exchanges met in annual session in Stillwater December 11. The association is a strong one, with members from all parts of the State. Trade topics were considered, the matter of the open shop being one of the leading subjects.

The building permits for eleven months of 1907 in Minneapolis aggregate $9,602,095. The total last year for twelve months was $9,466,150, and if December amounts to $325,000 or more the highest mark ever reached, that of 1888, will be passed. St. Paul permits are also ahead of the entire total for 1906.

MEMPHIS AND THE SOUTHWEST.

MEMPHIS, TENN., Dec. 18.—But little new construction work is being projected in the Memphis territory and in Southwestern towns, but much old work and some large jobs that run from month to month remain under way and are the cause of liberal sales by supply dealers. Cement and some materials tend a little lower in price. The outlook in Memphis alone for 1908 is very good. The financial situation shows less tenseness. The new Union Station to be built here next year, and for which a site was definitely selected some weeks ago, is one big job that will mean much for Memphis. Then the million-dollar courthouse, which will require many kinds of rock products, will be under way about all the coming year.

The General Concrete Construction Company is a new entry in the list at Memphis. Carl Streler, W. F. Koehler, C. E. Davis, W. F. Hannons and G. J. McSpadden are the incorporators. The capital stock is placed at $10,000. The company will erect residences and other buildings.

The Ornamental Cement Brick and Block Company, 542 N. Manassas Street, report that they have had a very satisfactory business in 1907 and will enter 1908 on a larger scale than hitherto. They have furnished the material for many handsome jobs in Memphis and neighboring towns.

The big Portland cement plant at Dewey, Kan., with a daily capacity of 2,500 barrels, opened early this month. The plant is one of the largest and most complete in the Southwest, having been erected at a cost of nearly $1,000,000.

The Connelly Construction Company has been organized at El Reno, Okla., and will erect a large factory for the manufacture of building blocks, drain tile, sewer pipe, etc.

LOUISVILLE.

LOUISVILLE, KY., Dec 18.—Operations both in concrete and other building lines have been drawn to a close for the present. This is due to the weather, in part, but the financial difficulty has had some effect also.

There has been much progress made along concrete lines here in the past twelve months, and while Louisville is not as prominent in this respect as some other cities, it has nevertheless taken a good stride towards the front in advocating this form of building material.

The Central Concrete Construction Company have nearly completed their work for the winter, and will not take any active steps toward securing new work until spring. Mr. Morris says that he is preparing to do some active missionary work in the coming season.

The National Concrete Construction Company have some of their forces at work. They are not rushed as they have been, but are busy enough to keep them on the go. They have little that is new, and do not expect any new contracts until next year.

The Southern Roofing and Paving Company say there is not very much doing, and they have closed down most of their work for the winter. In roofing there is little activity.

The Fitch-Troxell Company report the season as being about over with them so far as the concrete industry is concerned. They have had a very successful year and are satisfied with the work accomplished. They look forward to a very good year in 1908.

C. S. Hall & Co. say they have done as much as they could handle in the concrete line in the last year, and they are still busy on some work that will keep them engaged for some time. They have been well pleased with the progress made.

The National Roofing and Supply Company say that while they are doing something in the roofing line, they are not as busy as they should be. They believe that the next year will be more favorable than the past few months have proven to be for their industry.

Samuel F. Troxell & Co. have not very much now in the roofing line, though they manage to keep moving.

The Kentucky Wall Plaster Company are still about as busy as they can be, and say that the financial flurry has not in the least affected their business. They are also operating the plant at Jeffersonville, Ind., and do not anticipate any decline in the demand in the near future.

The Atlas Wall Plaster Company say that they have as many orders as they can take care of, and are operating full time. They have experienced no decline and see no reason why conditions should not continue favorable.

J. B. Speed & Co. manage to keep things on the move and have a good demand for Portland and natural cements and lime. They are very well pleased over the prospects for the future, and have no reason to complain of conditions.

The Kosmos Portland Cement Company have lately received some nice orders, and they are looking forward to increased demand in the near future. Mr. Timmons, the new sales manager, is getting things in shape for future activity.

The Utica Lime Company are not rushed, but they have enough business to keep things full of interest. They see no reason why the coming year should not be a good one for the industry.

The Ohio River Sand Company are making preparations to close down their operations for the winter. The demand with them is not very active just at present and they do not look for much business during the next few months.

W. F. Nugent & Bros. have nothing startling to report at this time, and are not looking forward to any great activity until after the winter months for river sand and gravel.

The Louisville Fire Brick Works have only a limited number of orders on hand and say that they will close down during the holiday season. They expect things to be first-class after the first of the year. Mr. K. B. Grahn, president of the company, is gradually recovering from his accident.

The P. Bannon Sewer Pipe Company find the demand fair for even this season. The demand for sewer pipe in the southern territory was not supplied last season by almost fifty per cent. The shortage of supply is commented on by dealers in all sections.

The Jefferson County Rock Company will be reorganized in the spring, and the managers expect to begin active operations at that time. They will get out considerable crushed stone and anticipate a large demand. They will install much new equipment.

PHILADELPHIA.

PHILADELPHIA, PA., Dec. 16.—Considerable work in the building line for which preparations had advanced has been put off, but it is believed that it will all be revived in the spring. Consequently prospects for 1908 trading are promising. The cement industries to a man have curtailed their labor. Values have about struck rock-bottom, and there seems to be a tendency to raise prices in the near future.

Limekilns have held steady work until recently. Firebrick plants are closing up odds and ends, waiting for the opening of the new year.

The Atlas Portland Cement Company, 1210 Fidelity Building, have reduced capacities in all their mills. Philip S. Vollmer of the concern has every confidence in the outlook for 1908.

The Edison Portland Cement Company, 613A Arcade Building, are optimistic concerning the near future. E. Meyer, manager of sales, is now making his headquarters at the New York office, and J. T. Wakeman is the Philadelphia representative.

The Charles Warner Company, 810 Land Title Building, report a seasonable slowing-up all along the line in building material.

The Lyster Supply Company, Thirtieth and Spruce Streets, report that, considering the weather, business has held up fairly well. It is falling off now, however.

Charles B. Bishop, cement worker, 446 South Fifty-second Street, is always busy; he realizes that good, honest work for the money always brings business.

The E. S. Bortel Company, roofing material, northwest corner Eighteenth and Market Streets, are closing up old work as rapidly as possible. New work is coming in slowly.

The Cyrus Borgner Company, firebrick and clay retorts, 236 North Twenty-third Street, are conducting their business upon a conservative basis, and look for favorable trading with the advent of the new year.

The Knickerbocker Lime Company, Inc., Twenty-fourth near Callowhill Street, report business to have kept up in fair shape. Their new hydrating plant is undergoing a few changes necessary to put it in thorough working order.

The Whiteland Lime Company, Devault, Pa., are closing up odds and ends, having reduced capacity for the winter.

The McCoy Lime Company, Bridgeport, Pa., have cut output about one-half.

The Keystone Lime Company, Plymouth Meeting, Pa., until recently very active, will now reduce its manufacturing to one-half for the season.

The American Brick and Cement Company, Wilmington, Del., obtained a charter on November 21. Capitalization, $100,000.

The McNichol Paving and Construction Company, Philadelphia, was chartered on November 22. Capitalization, $100,000.

The Northwestern Construction Company, Franklin, Pa., was incorporated on December 5. Capitalization, $25,000.

The Thomas Engineering Company, Allentown, Pa., was granted a charter on December 7. Capitalization, $30,000.

A smoke-stack of concrete, one of the first of its kind to be erected, and incidentally a good illustration of the adaptability of concrete blocks, is the experiment of the Cook's Ferry pumping station of the Southwestern Pennsylvania pipe lines. The stack is 120 feet high and has an inside diameter of 4 feet. It has an inner shell of firebrick laid up in fireclay for a distance of 45 feet. The remaining distance is not lined in any way. The stack is reinforced with both vertical and horizontal steel rods, the vertical rods extending into the foundation, where they branch out like the roots of a tree, and extend clear to the top of the smoke-stack. The horizontal reinforcing consists of rings laid in the joints between the layers of blocks and lapped and wired to the vertical rods. The blocks are made solid with recesses for engaging the reinforcing bars. The bottom of the foundation is 8 feet below ground grade and is 18 feet square. The foundation and octagonal part of the stack was built in place with wooden forms and is heavily reinforced, while the remaining or round portion of the chimney is built of solid concrete blocks.

The City Council of Atlantic City, N. J., has left the awarding of the contract for the new concrete and steel boardwalk to the special boardwalk committee, which will probably give the work to the Raymond Concrete Company for $53,534.98, the lowest bid.

The Lackawanna County grand jury has recommended the construction of fifteen new bridges in various parts of the county, and the repairing of another. All of the bridges are to be steel-girded, with concrete foundation, and the filling and grading is to be done at the expense of the municipality in which the bridge is to be built.

BUFFALO, N. Y.

BUFFALO, N. Y., Dec. 14.—Mosier & Summers, Buffalo contractors, have been awarded the contract to build the Pennsylvania State Hospital at Danville, Pa. The bid was $252,290.

Green & Wicks, Buffalo architects, have received first prize, amounting to $1,500, for preparing plans for the new buildings and improvements to be made on the Syracuse State fair grounds.

Deputy Building Commissioner Henry Rumrill, Jr., of Buffalo, is quite optimistic about the activity in building circles for next year. He said: "We hear of many plans for new buildings, and indications are that they will be in process of construction next spring, getting plenty of business to the builders and plenty of work to their men."

The Canadice Lake Building Company has been incorporated in Rochester, N. Y., with a capital of $25,000.

The highest bridge in New York State was recently opened for traffic fifteen miles from Hornell, N. Y. The abutments of the steel structure are of reinforced concrete. The bridge was built by the Pittsburg, Shawmut and Northern railroad over Stony Brook Glen. To test the concrete abutments and the material in the structure trains heavily loaded with coal were run over the bridge at various rates of speed, and the experiments proved a great success.

Plans for the new Elias Joseph department store in Elmira, N. Y., are being completed by Otis Dockstader, architect.

According to a report from Port Colborne, Ont. the Empire Limestone Company's scow recently took 5,000 yards of gravel to the Peter Lyall Company.

Architect J. Foster Warner of Rochester, N. Y., has prepared plans for remodeling the courthouse at Canandaigua, N. Y. More than $100,000 will be spent in the proposed improvements.

It is reported that the records for the first eleven months of 1907 show that buildings to the value of $6,309,460 have been erected in Rochester, N. Y., in that period. This amount is an increase of $705,481 over the record of the corresponding eleven months of 1906.

The Victor (N. Y.) Gypsum Company was recently organized with the following directors: Howard G. Fisher and Henry L. Steiner of Akron, N. Y., and Charles L. Tuttle, Allison C. Tuttle and Joseph W. Hart of Rochester, N. Y. The company has a capital of $200,000, and will prepare for market gypsum rock and building sand and gravel.

It is said that the present year will eclipse all others so far as the construction of houses in Binghamton, N. Y., is concerned. It has far outclassed 1906, and there is plenty of building in sight for 1908.

Charles L. Schutrum, a Buffalo builder, will erect forty two-story frame houses this winter at Black Rock, a suburb of Buffalo. The houses will cost about $2,500 apiece. The buildings will be owned by Thayer, Tuttle & White and H. H. Guenther of Buffalo.

Thirty acres adjoining its plant have been bought by the United States Gypsum Company at Oakfield, N. Y. About 130 up-to-date houses will be built on the land and will be rented to employees of the company.

Col. Ward, Commissioner of Public Works, Buffalo, has recommended that concrete arches be built in repairing the viaducts on Main and Washington Streets over the Belt Line tracks in this city.

A reservoir, auxiliary to the waterworks system of Rochester, N. Y., is being built at Cobb's Hill. Much concrete is being used. The bottom consists of concrete covered with a waterproof coating of coal tar, pitch and felt. The reservoir will have a capacity of 140,000,000 gallons. Denniston & Co. are the general contractors, their bid being $390,805.

NASHVILLE AND THE SOUTHEAST.

NASHVILLE, TENN., Dec. 17.—The Nashville market continues fair, the financial conditions over the country considered. The Elliston Flats, McKendree Church and numerous residences and business houses will go up this winter.

Ellis C. Soper, superintendent of the great cement plant at Copenhagen, Tenn., delivered an address before the Vanderbilt Engineering Association, in Nashville, a few evenings ago, that was much appreciated. Mr. Soper's address dealt with the manufacture of Portland cement, especially with the great plant of the Dixie Portland Cement Company, which he has been building.

The Chattanooga Concrete Company has been organized at Chattanooga, Tenn., and will make a specialty of sidewalks. The capital stock is $10,000. W. L. Lawton, Harry Winer, Raymond Reeves, and others are identified with the company.

THE WEST COAST.

SAN FRANCISCO, Dec. 15.—The building situation looks very favorable. A number of large steel-frame buildings which will have reinforced concrete foundations and floors are to be erected in the near future, as well as a few structures of reinforced concrete throughout. While steel-frame buildings are greatly in favor at present the advocates of reinforced concrete say that a reaction in favor of the monolithic system of building will soon set in. The fact that the era of very high wages seems to be near its end is in favor of the latter form of construction.

The building permits issued in San Francisco for the month of November showed a slight falling-off, as compared with October. The November figure was over $1,482,000.

Building materials are lower in price and there are ample supplies of nearly every item. The production of Portland cement at California mills has been considerably reduced during the past two months, one plant having been closed on account of a car-shortage and others reduced their force.

Receipts of foreign cement from Europe at San Francisco during the month of November were very light, amounting to three shipments, aggregating 21,308 barrels. There is much European cement afloat and loading for San Francisco and other Pacific Coast ports.

Announcement has been made that the Standard Portland Cement Works at Napa Junction, just north of Vallejo, Cal., which shut down recently, will resume operations about the first of the year. The shut-down was caused by lack of cars, but the situation is improving rapidly.

The Pacific Portland Cement Company of San Francisco, which has been running its large cement factory at Cement, Solano County, Cal., with about half a force lately on account of the scarcity of cars, will soon increase its output. The low price for cement which was adopted by this company in common with the other manufacturers of this State several months ago is still in force.

Advices from Bisbee, Ariz., say that W. H. Holden & Co. have received a large order from the El Paso and Southwestern Railway Company for concrete tile for use in the construction of culverts. Mr. Holden says that he will soon enlarge his plant. The concrete blocks turned out are fireproof and cheaper than wood for culverts and buildings.

The Warren Construction Company of Vancouver, Wash., have closed a deal by which they secure the Patton tract at the foot of Main Street. It is understood that more than $25,000 was paid for the property. The company expect to put in a big plant for the manufacture of the various kinds of material used in constructing street pavement.

Frank H. Ross, H. E. Williams, Paul S. Williams, Grove C. de Zaldo and A. H. Jarman are the directors of the San Jose Rock Company, articles of incorporation for which were filed at San Jose, Cal., in November. Its capital stock is $25,000. Its purposes are declared to be the quarrying and crushing of rock.

The Marysville Sand Cement Block and Brick Company commenced operation in November at their plant in Marysville, Cal.

I. Edwall of Red Bluff, Cal., who recently visited San Francisco to inspect the different types of building materials used in the rebuilding of the city, recommended on his return that the projected opera-house at Red Bluff be constructed of cement blocks.

The Gardner Pipe Works have leased a site for a plant for the manufacture of artificial stone blocks at Santa Ana, Cal.

Messrs. Carter and Schrimpf Bros., proprietors of the Santa Paula Cement Pipe Company at Santa Paula, Cal., are planning to put in a plant at Satioby, where they have several orders for irrigating systems. They will put in a system for W. T. Neel.

The great rock-crushing plant at Dredge, near Folsom, Cal., began operations recently. This is a large plant for grinding up rock for building, paving, concrete and other uses.

The cars which were rushed out of California a few weeks ago for the Oregon trade are now being returned to this State, and Stone Bros.' big quarry at Cordelia is getting nearly its full quota of cars. About fifty carloads are shipped daily.

The G. L. Johnson Company, which was organized last month, will commence a crushed-rock business at Point of Rocks, three miles from Riverside, Cal.

A certified copy of the articles of incorporation of the California Lime Company has been filed with the county clerk at Yreka, Siskiyou County, Cal. It is incorporated under the laws of Arizona, with a capital stock of $500,000. The objects of the corporation are quarrying and otherwise obtaining lime, burning and preparing it for the market; also to deal in bricks, tiling, mineral, coal, timber and oil lands. The main

SYRACUSE, N. Y.

SYRACUSE, N. Y., Dec. 16.—The only large work that is now going on is the permanent repairing of the Onondaga Creek aqueduct under the Erie Canal, which gave way last summer and was temporarily repaired. Over $100,000 will be spent there this winter, and work will be continued through cold weather. Syracuse dealers have received word that most of the cement mills have been closed down. This affects the gypsum and plaster business and many other lines of trade.

The Empire Portland Cement Company at Warner has closed down its plant for the winter, but a number of men have been retained putting it in condition for an early spring opening. The packing department will be kept open. H. S. Hayden, the manager, says that the season just closed has been the most successful that they have ever had. The company supplied 26,000 barrels of cement for the University Stadium.

The Paragon Plaster Company will build a store house this winter at its plant in West Fayette Street to cost $4,500. The building will be of concrete construction, 48 by 100 feet.

Commissioner of Public Works Frank H. Westcott will include in his budget for next year the construction of a new concrete swimming-pool to replace the old wooden structure at the Municipal Bathhouse. The pool will be 100 by 40 feet.

Lafayette P. Costello has been named as receiver of the National Webb Tile Sewer Company. Petition was made before Supreme Court Justice Andrews by the directors of the company to close up its affairs. The liabilities are about $1,200.

The Syracuse Mantel, Tile and Marble Company make a specialty of wainscoting and flooring of tile and marble. They now employ thirteen men and have been doing a large business. Members of the firm are John Strathdee and J. Leo Nicholson. One of the jobs now under way is at the Custodial Asylum at Rome.

FORT DODGE, IOWA.

FORT DODGE, IA., Dec. 16.—It is reported that Messrs. Fowler & Pay, of Mankato, Minn., will build a new gypsum mill here to take care of the business already established at their plaster plant. Mr. Fowler recently went to Des Moines to place an order for the machinery. It is understood the plant will be a three-kettle mill and ready for business next spring.

The Red Wing Sewer Pipe Company, of Red Wing, Minn., has secured an option on the present plant of the Fort Dodge Brick & Tile Company, of this city, at a price of $80,000.

The Plymouth Clay Products Company started its one-press sewer-pipe plant today and will operate it during the winter months, storing all stock ready for spring business.

At the first annual meeting of the Northwestern States Cement Company, at Mason City, last month, the members present were given a surprise in the report made my President W. F. Cowham that, instead of 2,500 barrels, the cement plant now under construction, there would be made to turn out between 4,000 and 5,000 barrels. Operations have already started, and cement is now being turned out. The officers elected are: President, W. F. Cowham, of Jackson, Mich.; vice-president, E. J. Breen, of Fort Dodge, Iowa; treasurer, C. H. McNider, Mason City, Iowa; secretary, W. H. L. McCourte, of Jackson, Mich.

No Let-Up in Business.

COLUMBUS, O., Dec. 13.—The officers of the Columbus Clay Products Company, with headquarters in the Columbia Savings and Trust Building, Columbus, and a large plant at Groveport, see not a let up in the brick business. The plant is now operated on full time and additional men are placed at work. The past year the capacity of the plant has been doubled, and it is expected to still further increase the output next year.

F. W. Owesney, secretary-manager of the East Ohio Sewer Pipe Company, Irondale, O., has been absent for a month on a trip to the West.

John F. Lent, of Pittsburg, will in the future have charge of all matters pertaining to railroad rates and regulations for the National Paving Brick Manufacturers' Association, having been appointed at a recent meeting held in Cleveland.

Clay.

Testing Paving Brick.

BY S. P. BAIRD, M. Amer. S. C. E.

Some months ago the Standard Brick Company installed at their works at West Charleston, W. Va., a standard rattler for the purpose of giving information which would assist in making a more perfect paving brick.

A large number of bricks and blocks of various makes and various sizes have been tested, but no information that would serve as a guide in comparing the values of the different bricks and blocks as a paving material, taking into account the different sizes tested, could be found.

One block was adopted as a standard and the weight of all the other bricks increased or decreased as much as they were smaller or larger than the standard. For instance, using an Ohio brick as standard, which measured 3¼x4x9, to be compared with a 3x4x9, the actual weight which went into the rattler was to the recorded weight as 3 is to 3¼. These 3x4x9 blocks were then rattled for an hour and the result noted. The different blocks were examined and enough added to the result to amount to a ¼-inch strip which had been estimated to have been added in the center longitudinally. Then the rate before and after rattling were compared and the percentage of loss calculated thus:

Dimensions of brick, 3¼x4x9. Weight 9 lb. Eleven bricks used.

99 lb. before rattling.
84 lb. after rattling.

Loss: 15 lb. or 15 per cent.

Dimensions of brick, 3x4x9. Weight, 8½ lb. Eleven bricks used.

93½ lb. before rattling.
75 lb. after rattling.

Loss: 18½ lb., or 19.78 per cent.

The eleven rattled 3-inch bricks were examined and the edges found to be rounded to a radius of 1 inch. Figure B.

The ¼-inch strip which was imagined as added to the brick, has only lost the small difference between Figures A and B. This is obtained by finding the cubic contents of ¼x4x9, with end corners rounded to a ⅜-inch radius=8.97 cubic inches, and the cubic contents of Figure B, ¼x4x9, with end corners rounded to 1-inch radius=8.95 cubic inches. The cubic inches in a block 3x4x9, edges rounded to ⅜-inch=103.95 cubic inches, corresponding, if the block weighs 8½ lb. to .0817 lb. per cubic inch. The ascertained weight per cubic inch multiplied by the number of cubic inches in our imaginary section after rattling, and this, multiplied by the number of bricks in the test, will be the amount to be added to the brick when taken from the rattler, which is, in this case, 8.43 lb., which, added to the 75 lb., the weight after rattling, equals 83.43 lb. Applying the correction for comparing bricks of different sizes, viz., 3:3¼::93½:101.31, the recorded weight is 101.31 lb.

Then, 101.31 lb.—83.43 lb.=17.88 lb., which is 17.64 per cent of 101.31 lb. So that in reality the two materials as a paving material are as 15 is to 17.88, not as 15 is to 19.78, as would have been usually taken. The difference between the two results is not altogether a difference in material, but the difference in size has somewhat to do with the difference in results, as shown by the rattler.

To corroborate this method of calculation, the Standard Brick Company have had made from the same clay, and from the same column, and burned side by side in the kiln, blocks of various thicknesses, and finding on rattling these various samples and applying the above reasoning, that the results agree.

In other words, one can predict in advance what a difference a change in the size of the bricks would cause in the percentage of weight lost in the rattler.

The Standard Brick Company do not think that the rattler test, as now conducted, is quite the test that will give the various bricks and blocks their just dues. They have found some blocks lose by general wear all over every surface and others lose by spalling at the corners and edges, and some blocks which lose heavily in the rattler will wear better in a street than others which do not lose so much. It is suggested that a rattler should be constructed cylindrical in form and the inside lined with blocks using wooden keys between each row of blocks, or, better still, set the blocks and use a cement filler. A charge of cast-iron cubes as at present seems the most suitable abrading material. This would be a test similar to the street wear and would test the filler as well.

Clay Workers Meet in Ohio.

The twenty-second national convention of the American Ceramic Society and the National Paving Brick Manufacturers' Association will meet in Columbus, Ohio, February 3 to 8, next. Although separate sessions will be held, both associations annually meet in the same city at the same time.

During the convention, the Ohio School for Clayworkers, in charge of Professor Orton of the Ohio State University, will keep open house. Demonstrations of advances made by the school since it was organized will be made.

New Plant Started.

FORT DODGE, IA., Dec. 9.—The Plymouth Clay Products Company, of which L. E. Armstrong is the president, commenced operations here today. The plant was erected at a cost of $250,000 and covers nearly two solid blocks. It is three stories in height and is the largest manufacturing enterprise in this section of the state. Sewer pipe will be the principal product. This factory is one of the largest in the state.

New Incorporations.

Progress Brick Company, Schenectady; capital, $25,000. Directors: F. W. R. Schoradt, Paul Schmidt, Joseph Gritzbach, Fred Diemer, Chas. F. Gerni, Henry Nicholas, Chas. Roberts, Conrad Baumgarten.

Tioga Red Brick Company, Ithaca, N. Y., to manufacture bricks, tiles, pipe, etc.; capital, $30,000. Incorporators: G. W. Cook, Ithaca; S. Howard, Scranton, Pa., C. H. Chapman, Ithaca.

General Ceramic Manufacturing Company, South Berwick, Maine; bricks, etc.; capital, $25,000. President and treasurer, William Thompson.

Paragon Metal Co., The Rookery, Chicago; to manufacture clays, metals and minerals; capital, $30,000. Incorporators: Myron H. Beach, George R. Brown, Herman F. Schroder.

The Montague City Aluminum, Carbon and Brick Company of Montague City, Mass.; capital, $150,000. Officers: C. P. Wis, W. C. Davis, W. H. G. Gilmore.

Cook Brick and Tile Company, Ithaca, N. Y., to manufacture bricks, tiles, pipes, potters, etc.; capital $20,000. Incorporators: George W. Cook, Charles H. Chapman, Loren J. Cook.

Navarino Cigarette Company, New York, to deal in tobacco, manufacture cigars, etc.; capital, $20,000. Incorporators: Geo. S. Terry and others.

The Western Clay Products Company, of Salt Lake City, Utah; capital stock, $25,000. Incorporators: Geo. Curley, A. A. Cahoon, W. S. Romney.

The Hydraulic Brick Company of Louisville, Ky.; capital stock, $350,000. The incorporators are: C. J. Doherty, D. McDonald and Geo. Boone.

The Ashton Fire Brick and Tile Company, Salt Lake City, Utah, has sold out to the Western Clay Products Company of that city its plant at Third West and Eighth South Streets, for $45,000.

The Stratton Fire Clay Company, of Empire, Ohio, are sending their customers a neat little souvenir in the way of stick pin and a leather bill-book. Business with this company is very good.

Frederickburg Brick, Coal and Clay Company is in the hands of A. J. Peterman, of Fredericksburg, and E. H. Hammond, of Ittsburg, as receivers. The plant, completed three years ago at the cost of many thousands of dollars, has never been in operation.

Bloomingdale, Ind., is to have a new clay plant. The factory will be built in the spring and will be located west of town near the C., H. & D. tracks. The land where the clay was found is controlled by A. H. Zimmerman of Brazil and consists of over 200 acres.

The Rome Crucial Fire Brick Company has commenced work on the erection of its new plant for the manufacture of fire and common clay brick near the intersection of the Rome & Decatur and the Central of Georgia railroads in West Rome and will be ready to manufacture brick about the middle of September. The plant will cost $50,000 and when completely equipped with the latest models of machinery will be one of the best factories in the South. Officers of the company are: J. L. Bass, president; R. A. Denny, vice president; Robert Yancey, secretary and treasurer, and C. N. Fuller, general manager. The fire brick will be manufactured by a secret formula compounded by Mr. Fuller, and tests have shown it to be of the highest resistance of any now manufactured.

Sand-Lime Brick

THE SAND-LIME ANNUAL.

The Gathering of the National Association of Manufacturers Unusually Interesting. A Prosperous Year Reviewed and the Outlook Good for 1908.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products was held at the Chittenden Hotel, Columbus, Ohio, December 4, 5 and 6. While the attendance was not quite so large as usual, due, probably, to the fact that the effects of the financial flurry which is now passing away were still felt rather uncomfortably at that time, the members present made up in enthusiasm what they lacked in numbers, and the sessions were marked by unusual interest. It was generally conceded that the past year had been a prosperous one for the industry, in spite of the financial riffles which marked its closing months, and that 1908 looked promising was the unanimous sentiment.

The morning session of December 4 was called to order by President H. O. Duerr, and Secretary Harry de Joannis was at his post.

Mr. J. Y. Bassell, the secretary of the Board of Trade, in behalf of that institution, as well as the municipal officers of Columbus, welcomed the members to the city, and President Duerr responded in a graceful manner, thanking the gentleman for his courtesy.

The president's address then followed.

THE PRESIDENT'S ADDRESS.

It is with pleasure that I welcome you to our fourth annual meeting. We are to be congratulated on so good at attendance; it at least indicates that there was some cash to be had from the banks in your several communities. I trust that we, neither as individuals nor as an association, are subject to the suspicion and lack of confidence that has placed so grand and prosperous a country as ours in so conspicuously ridiculous, not to say dangerous, position as to be almost panicky.

How easy it is to forgive ourselves the mistakes made in sand-lime productions when we hear of old, tried financiers, men of science and of letters, crying ruin, because we have a man at the head of this nation who knows right from wrong—who can, and does, assert it. I can only pray that this association at this meeting, and at all other times, may emulate the great ideals which our esteemed President lives up to.

I do not wish to be understood as being optimistic or pessimistic. I have considered the pros and cons of the sand-lime products industry in all its phases so many times that I am becoming more and more conservative over it. Notwithstanding that conservatism, I believe today in the future of the sand-lime products industry just as firmly as I do in the future of our nation.

As we are leaving behind us a period of frenzied finance, a period of irresponsible, questionable business transactions, and moving into a new era of truth and integrity, so also is the sand-lime products industry bound to pass through a transition period—from the period of irresponsible promotion, a period of unreliable production, to a period of greater intelligence and more thoroughness.

As we look back over the last five years in this industry we cannot help but feel that we have been in a very chaotic state. The time seems ripe for us to take stock. Why? Because of the failures, and because of the necessity of the future of this business. We must make the public believe in us; and to make the public believe in us we must first believe in ourselves. Just so long as we are producing a material indifferently good, when in the depths of our own hearts and conscience we know we can do better, just so long we cannot obtain the recognition to which we are entitled.

Gentlemen, you know that there is not one of us who cannot make a better article than he is now producing, at no greater cost, if he will make the effort.

If this association is to continue for any good purpose whatsoever, and accomplish anything, it must stand unqualifiedly for truth. And when I say truth I mean the truth of the good worth of its materials, for which this organization stands.

Let us briefly glance over the history of the past few years, since the advent of this industry, and note what has been done.

From the consular reports we hear that a great invention has been discovered in Germany which is to revolutionize the building industry in many communities. This discovery has been commercialized and is showing wonderful success. Next we hear of the organization of certain companies being promoted for the purpose of manufacturing this wonderful building material under rights which have been given by dispensation; and if you wish to reach that great goal of your ambition it is incumbent upon you to obtain, immediately, a franchise. Unless you grasp the opportunity at once your neighbor is going to take it away from you, and consequently you soon find yourself possessed of the right to manufacture this building material under the special dispensation which no one else in your community can have. Your opportunities are without limit. You have the world at your feet. The result, in cold facts, is that the franchise for which you paid good hard cash is worthless, because you find that there are other franchises, equally as good, being given away with a package of machinery, for which you paid good money. You find yourself possessed of a badly designed plant, with machinery wholly inadequate for the purpose intended. On the top of all this you have gone into a business which you are led to believe required no knowledge, and you find yourself entirely out of place, without knowledge or cash. What has been the result? Failure, discouragement, heartaches, backaches, even hardships for many, with but few successes.

The surprise to me is that there have been so many successes. The fault cannot be placed upon any one thing, but upon everything.

Can we remedy the situation? I say, yes. What shall we do? First as individuals, second as an association, let us firmly make up our minds that we are going to make the best possible products that can be made. When we have done that we will have the public with us. Have we the appliances necessary to do this? Again I say yes. There are a number of good reliable concerns, some members of this association, who are capable of producing, and who do produce, good machinery. Do not let us tempt them, however, to neglect our interests by inadequate compensation. Let us demand the best from them and pay the best prices.

Again let me reiterate that there is not one of us who cannot make better brick at no additional expense. This may seem like a broad assertion, but I believe that every one of us can prove it to our own satisfaction if we make the effort.

The public is going to demand better results from us. I do not mean to say that they are going to single us out, but the demand is becoming general in all lines, and we cannot expect to be overlooked.

Last summer one of our members addressed a letter to the association, stating that he was being discriminated against by the Board of Fire Underwriters, in that they were placing the highest rate of insurance upon buildings built with his brick, classing the brick in the same class as concrete block; which meant, practically, in the same class as a frame building.

And, by the way, I only recently saw an article in one of the cement journals headed:

"Methods that contribute to success, and some of the causes of failure. Manufacturers beginning to realize that experience is essential to success."

The article under this heading is prefaced by the following remarks of the editor:

"In publishing the following communications on the subject of concrete block it is with the conviction that the time has arrived when the manufacturer must discriminate between good and bad methods if the industry is to prosper. Excellent block, answering every structural requirement, have been made in the past and are being manufactured today. On the other hand, there have been many failures.

"From time to time Cement Age has published communications from experts, who have explained the secret of making good block. Some have been advocates of the so-called dry or hand-tamped mix, and others have had equal success with the hydraulic process. All agree, however, that to achieve success there must be the knowledge or experience required in any other industry.

"It is safe to say that in undertaking the business many blockmakers were chiefly influenced by the conviction that it required no previous experience and could be intrusted to workmen of ordinary intelligence. Here and there very intelligent and capable men have failed to master the secret of making good block, and, being too honest to deal in an inferior product, they have abandoned the enterprise. It is with the hope of assisting blockmakers of this class that we publish the following letters, one from J. F. Murray, manager of the Pocatello Pressed Stone Company, Idaho, stating why he regards the concrete block as a failure, and replies thereto by Messrs. H. H. Rice of Denver and Noyes F. Palmer of Brooklyn, both experts on the subject of block and among the pioneers of the industry."

The subject is too lengthy for us to go into in detail. It is sufficient for us to try to benefit by their experience, if it is possible.

To get back to the subject in hand: After more or less correspondence a committee was appointed to take up the matter with the National Board of Fire Underwriters, Chicago. A meeting was arranged by the secretary and was attended by a committee of your association.

The reply to our statement that we felt we were being discriminated against was, "We know nothing about your materials; the matter has never been officially before us, and consequently we placed the material on a rating where we felt we were safe until such time as it had been demonstrated to us that an injustice had been done," to which your committee replied that many tests had been made by laboratories and eminent experts. The question was then asked, "That may be true in individual cases; but do you mean to tell us that all your plants are making uniformly good brick?" I regret to say that your committee was forced to admit that such was not the case. After considerable further discussion and correspondence it was agreed to frame specifications which would meet the requirements of a good building material and a good fire-resistive material, these specifications to be submitted for joint adoption and such plants as made a product which came up to these requirements were to be indorsed by the National Board of Fire Underwriters. This indorsement entitled the owner of such buildings as were built of such indorsed brick to receive the minimum rate of insurance. I trust that, after careful consideration, you will see fit to act formally upon them. It behooves every member of this association to make brick which will pass these specifications. In my opinion there can be no higher incentive for every manufacturer to make good brick.

I trust you will forgive me for dwelling at such length upon this particular phase of the situation. My excuse is that I feel the situation keenly, for I can see no longer need of our traveling blindly.

All of our meetings have been delightfully full of enthusiasm and good work, but I am afraid that before we start for home many of us will have lost that enthusiasm. This condition does not help us. I have given much thought to what might be done to keep up the interest and to continue the work throughout the year, and if I may be permitted to make a suggestion I would like to ask the association before we adjourn this year to consider the dividing of the territory, which the association covers, into sections, each section having an executive official who shall call meetings of his section quarterly, or at such periods as may be thought best, and if the members of these sections are unable to attend the national meeting, to send one or more representatives to the national meeting, who can report the results to the sections at an early day.

THE FOURTH ANNUAL GATHERING OF THE NATIONAL ASSOCIATION OF MANUFACTURERS OF SAND-LIME PRODUCTS.

Too much work for the individual good of our members cannot be done at the present time. We are in a critical period in our national business affairs. We have a right to expect a period of more or less business depression, although we hope to the contrary. It is a time when we must all curtail every possible unnecessary expenditure, when we must enforce economy. And what greater curtailment can we make, what better economy, than to put our plants on a good, steady, daily output of ultimate capacity? And how can we better accomplish this than by knowing the achievements of our successful neighbor, emulating his results by adopting his methods? Therefore, let us enter into the proper spirit of this meeting and put into practice throughout the year the benefits derived. Let us stand together and, standing, uphold the best methods.

The president's address was followed by the report of the secretary, H. de Joannis, Chicago.

REPORT OF THE SECRETARY.

The membership of the National Association of Manufacturers of Sand-Lime Products in December, 1906, counting only the manufacturers of sand-lime products and of machinery and supplies for the establishment and carrying on of their enterprise, was fifty-two. This number did not represent the rated membership of the association, which was enlarged by the names of trade journals and others to whom privileges of membership without dues had been extended. Such membership was suspended at our last meeting, and the actual paid-up membership of this association today composed, with but one or two exceptions, of companies and persons vitally interested in the welfare of the industry is seventy. This numerical addition should be gratifying to all of you.

During the secretarial term of office over 2,000 letters have been sent out; 2,900 copies of the booklet entitled "Sand-Lime Products: Their Qualities and Uses" were sold and 907 copies were distributed in missionary work among architects, contractors, Government officials and insurance representatives, as the needs of such work became manifest.

I would recommend that future booklets for distribution be made the same size as the last, and that in them the names of members of the association and of other manufacturers of sand-lime products be omitted, so as to better serve the purposes of distribution for those purchasing them. Such a list was of value in the early stages of our industry to convince the architect that the product was extensively manufactured. It had this drawback, however, that it opened an avenue for the architect to deal with different manufacturers in an endeavor to secure an abatement of price. For this reason several members of our association did not feel it to their interest to purchase copies of the present booklet. In order to serve the purposes of all, therefore, this recommendation is made.

It is with pleasure that I acknowledge the loyal support of this association and of several of the members, both new and old, during my term of secretaryship. I also desire to publicly thank those who have contributed to this program, as they volunteered at first call and gave of their time and knowledge freely and without urging.

According to the latest figures there are 115 plants in actual operation. The most important event of the twelve months past has been the attitude of certain insurance companies to our products. Owing to a ruling of the Southeastern Tariff Association, Atlanta, Ga., which placed sand-lime products in a class with concrete products and discriminated against them in favor of clay brick, the insurance on buildings constructed of sand-lime products was made more than double that of clay-brick construction. Such ruling affected the sand-lime brick industry in five states and there was a serious promise of this ruling being adopted by other tariff associations. F. H. Smith of Wilmington, N. C., wrote to your secretary, and, as a result of letters exchanged between President Duerr, F. H. Smith and the secretary, a committee was appointed to meet in Chicago to discuss the matter with the committee of the National Fire Protection Association. The committee of the National Association of Manufacturers of Sand-Lime Products consisted of H. C. Duerr, L. S. Anderson, F. H. Smith, Adolf Van Spanje and H. de Joannis.

It may be well to explain in a few words the relationship which exists between the Underwriters' Laboratories, the National Fire Protection Association and the different tariff associations. The National Fire Protection Association is composed for the most part of tariff associations and other people interested in insurance and fire-protective matters. The National Fire Protection Association has its tests performed by the Underwriters' Laboratories. The findings of the Underwriters' Laboratories in all tests are accepted by the National Fire Protection Association as a base for its rulings, and its rulings form the base for the individual rulings of the associations which are members of the National Fire Protection Association. The National Fire Protection Association has no authority to compel any of its members to accept its rulings and they are left free in their individual actions, but the probabilities always are that the joint example of the Underwriters' Laboratories and the National Fire Protection Association strongly influences and determines the individual actions of the tariff associations.

The Southeastern Tariff Association stated to us through its representative, Fred E. MacKnight, that they ruled sand-lime products to be in the same class as concrete hollow block because they had no reliable information as to the nature of sand-lime products and their fire-resistance, and their ruling, therefore, was on the safe side. When attention was called to the fact that tests had been made by Prof. Ira H. Woolson and others, showing the value of sand-lime products as a fire-resistant, the Southeastern Tariff Association declared that though these tests were valuable it was not prepared to accept them as final, but was prepared to give attention to the result of tests made by the Underwriters' Laboratories, which was their recognized medium of testing. All the other associations will take the same stand, and hence our members will understand why it was necessary for us to meet in Chicago and take up the matter with the fountain head.

At the meeting already referred to, on July 11, we were received most courteously by the committee of the National Fire Protection Association. At the request of the chairman, Mr. Henley, Mr. Duerr presented our side of the case and our complaint at the unjust discrimination which had been made. The presence of Mr. Duerr at this meeting was invaluable. Mr. Duerr was fortified by a number of photographs showing tests on different stones and sand-lime products, which conclusively demonstrated the superiority of the latter. A number of questions were put to us by the different members of the committee, to which Mr. Duerr and F. H. Smith made satisfactory reply. These questions involved a number of matters. The questions were in most cases directed by Mr. Merrill, manager of the Underwriters' Laboratories and secretary of the National Fire Protection Association. The information given in answer to these questions covered the extent of the industry; the number of plants; amount of capital invested in the aggregate and in the segregate; the differentiation in methods of manufacture between sand-lime brick and concrete hollow block, showing the chemical and mechanical differences; the superiority as regards uniformity of product of the sand-lime brick to clay brick; the importance of the modulus of rupture as compared with the compression test, and the temperatures to which sand-lime brick have been subjected.

As a result of this meeting the National Fire Protection Association then made the proposition that two committees be appointed, one by the National Fire Protection Association and the other by the National Association of Manufacturers of Sand-Lime Products, to arrange for a series of tests to be made on sand-lime products by the Underwriters' Laboratories, the manner and extent of these tests to be decided upon by the two committees. The National Fire Protection Association offered to stand half the cost of such tests. This was agreed upon, and the National Fire Protection Association appointed for its committee E. T. Cairns of New York, W. C. Robinson of Chicago and H. C. Henley of St. Louis. The committee appointed to represent our association was composed of H. O. Duerr, Adolf Van Spanje and J. L. Jackson. Mr. Jackson was notified immediately by your secretary and Mr. Merrill was notified by mail of the membership of our committee.

Several subsidiary meetings were held in Chicago between the representatives of the Underwriters' Laboratories and our association, the evolving of satisfactory specifications, under which the tests should be conducted, being the object. This work accomplished, copies of the suggested specifications were furnished by the courtesy of the Underwriters' Laboratories and forwarded by the secretary of this association to the members of the insurance committee. By mutual agreement a final meeting for the ratification of the specifications was then called on December 2 at Chicago, so that a report could be presented at this meeting.

On December 2 your committee, composed of H. O. Duerr, J. L. Jackson, Adolf Van Spanje and the secretary, H. de Joannis, met at the Underwriters' Laboratories, whose representatives were W. C. Robinson and W. H. Merrill, Jr. Mr. Henley, the chairman of the Underwriters' committee, was unavoidably detained, as was also Mr. Cairns of New York city. The meeting began promptly at 10:15 a. m. and the two committees went over the suggested test specifications for building materials in the form of brick, step by step and clause by clause. A presentation of the specification was finally revised and approved by both committees and will subsequently be given you at a later session of this convention by our insurance committee, so it is unnecessary for me to do any more than mention that the meeting took the whole day and almost every paragraph of the specifications under consideration evolved an interesting discussion.

I would urge upon the members of this association the keenest attention to the report of our insurance committee. It is the thin edge of the wedge for the raising of the quality of building materials throughout this continent. I am absolutely confident that no better set of tentative specifications has yet been presented to the American public. Throughout these deliberations it has been the aim of both committees to prepare such specifications that comparative results may be obtained from every series of tests made based upon them. The great disadvantage of previous specifications has been that they have been made under different conditions, so that their entire value has been lost, each one hitherto having had its peculiar method of procedure, but the tests and specifications to be presented to you possess superior merit. Time, of course, alone can test their final accuracy, but the maintaining of similar conditions under all tests will insure definite results.

DECEMBER 4—AFTERNOON SESSION.

At the afternoon session a paper was read by J. Harry Allen of Winchester, Ky., on "Essential Conditions of Manufacture for the Production of a Uniform Sand-Lime Product."

Some discussion took place on the discoloration of the product as a result of leaving the cars of brick standing too long before placing in the cylinder and subjecting them to the action of steam. Mr. Rankin, Saginaw, Mich., stated that poorly hydrated lime and subsoil sand were the cause of the poor color and that leaving brick exposed to the air for any length of time before hardening would result in discoloration and the face of the brick would be softer after hardening.

In response to a question by J. L. Jackson, Saginaw, Mich., as to the difference in this regard between brick manufactured by the silo system and the hydrated-lime system, President Duerr stated that numerous experiments in his plants had shown no difference in result with either system. In his opinion the carbon dioxide in the atmosphere acted on the surface lime particles in such a way as to carbonate them, and consequently silication was impossible; hence the color of the sand predominated and the darker shade resulted.

The discussion closed with a suggestion for covering the brick cars with a cloth during the period between their leaving the press and entering the cylinder, and also several experiences concerning the shutting down of the press at 3 p. m., and the using of the exhaust steam from the engine to take the chill off the hardening cylinder.

"The Power Plant." Mr. Jackson believed that for the ordinary purposes of a sand-lime brick plant a tubular boiler well-set and installed was superior to a water-tube boiler. It should be complemented by a heater, which should be accessible and easily cleaned. A duplex pump should be used for the pumping of the water from the well to a tank, from which it will proceed to the heater by gravity. At the other end of the heater the hot-water pump will supply the force necessary to send the water to the boiler, and he advised the installation of an injector in case of accident. He thought a pan heater the best type to be used, preventing neglect on the part of the engineer. The top can be taken off such a heater, the pans removed and cleaned and all scale taken away. Mr. Jackson strongly believed in good insurance and an inspection of the power equipment twice a year, internally and externally, as it reduced the liability of accident to a minimum and put the engineer and fireman on their mettle.

A lively discussion followed concerning the adequacy of a steam flue-cleaner. Varying results seemed to have been obtained with such steam flue-cleaners and the consensus of opinion seemed to be that it was best not to rely solely on the steam flue-cleaner, but to use it in conjunction with manual cleaning also.

L. W. Penfield, Willoughby, O., expressed himself in favor of the simplest apparatus, a model ordinary equipment being a 125-horsepower engine and a 150-horsepower boiler.

Mr. Rankin, Saginaw, Mich., said that it was his practice after steam-hardening to return the steam in the cylinders to blow it down and not have too much moisture.

Some discussion followed as to which was the proper word to use, cylinder or kettle, these words having been used indiscriminately by the members. It was finally decided that the association should adopt the word cylinder.

Some reference was made to the accident at Schenectady in the blowing out of the cylinder-head, resulting in the death of three men. After hearing details it was decided that the accident was due to the carelessness of the employees and was not considered to be a part of the ordinary risks of the industry. In the accident in question the men started to remove the bolts of the cylinder head with a full pressure of steam still on the cylinder. There was probably a million pounds of steam pressure on the head. After the loosening of five or six bolts the head blew off, blowing two men clean through the wall, the cylinder itself going through the other side of the plant and killing another man 300 feet away. The men should have opened another cylinder, from which the steam pressure had been turned off, and the accident was entirely due to their lack of care and their negligence to examine the recording steam-gauge.

The members then took up the matter of the advisability of having a steam-gauge to each cylinder and a recording gauge in the office.

The transmission of power was discussed by F. H. Smith, Wilmington, N. C., the respective merits of rubber belting and Gandy belting being held under consideration.

W. K. Squier, Syracuse, N. Y., raised the point of the desirability of cars being weighed at their point of destination, instead of the purchaser being required to accept the weight given by the railroad company based upon the weighing of the cars at the departure. He stated that he had received cars supposed to contain 66,800 pounds of coal, which by actual measurement only contained 33,000 pounds. Such discrepancy could only be due to the absurd method which prevails in certain localities of weighing the cars when they were yet connected in the form of a train. The matter was referred to the committee on resolutions.

Several statements were then made by members as to the amount of coal used for production of 20,000 brick. Mr. Hobart believed that the best way to get at comparative figures would be to consider the number of heat units in the respective coals, as these vary from 8,000 to 16,000 heat-unit value.

A discussion as to what extent efflorescence appeared on sand-lime products in general and what remedies have been applied was then taken up. It seemed to be the opinion that efflorescence did not trouble the industry generally, but only in isolated cases. Three cases were cited by Mr. Duerr: In one the sea-sand used contained salt; in another there was sulphate in the lime, and in the last case this trouble was due to the improper preparation of the material, the analysis showing the existence of free lime in the brick, the remedy obviously being the cutting down of the lime supply.

Mr. Rankin stated that efflorescence was noticeable where the magnesia was excessive and was not to be found in brick in which high-calcium limes were used. It was suggested that cement copings or the mortars themselves often were responsible for an efflorescence on the brick's surface, and efflorescence through such cause was also to be found on clay brick. Where Portland cements were used efflorescence was bound to appear. This last statement brought up the question as to the advisability of using cement at all if it effloresced, to which Mr. Duerr replied that it was

a case of choice between strength of bond and beauty of surface.

J. L. Jackson attributed efflorescence largely to faulty lime mortars. He maintained that no time was allowed in this country for the proper hydration of lime, more than three days being rarely given for the hydration. In Europe, on the other hand, hydration was allowed to proceed three months and sometimes twelve.

Mr. Plummer said that brick were often laid too dry and believed that damp brick would make a better bond. He gave an interesting experience of the construction of cisterns with his brick laid in the wall damp with most satisfactory results, so that the cistern after months of use showed no signs of leakage.

MORNING SESSION.

The session opened with the reading of "General Notes by a Traveling Limist," by A. R. Battey.

In the discussion that followed it was advanced that it would be advisable to have a vent on the top of the hardening cylinder for the exit of cool air. Several members stated that such a vent was in use on their plants. Others also stated that they used the perforated-pipe method of introduction.

The next paper on the program was "Advanced Methods of Cost-Keeping," by John L. Jackson, Saginaw, Mich. Mr. Jackson advocated the classifying of labor costs by departments and believed that the lack of knowledge of cost of products has brought about a certain loss to the manufacturers.

The convention then listened with much pleasure to Dr. E. W. Lazell of Philadelphia, Pa., who read his paper on "The Necessity of Care in the Manufacture of Sand-Lime Brick."

The next paper on the program was on "Enamel for Sand-Lime and Common Clay Brick," by J. M. Hirsh, a prominent Chicago chemist. Much interest was expressed in this paper and a criticism of it was entrusted to Dr. W. E. Lazell, such criticism to appear in the report of the proceedings.

AFTERNOON SESSION.

The afternoon session opened with an excellent address by J. M. Marriott, Columbus, O., on "The Architect's Attitude Toward Sand-Lime Brick." A special vote of thanks was given him for his interesting paper.

THE ARCHITECT'S ATTITUDE TOWARD SAND-LIME BRICK.

By J. M. Marriott.

The question of the architect's attitude toward sand-lime brick is of such great importance to the architect and his client, and to the manufacturer and the dealers in this material, that I regret exceedingly that a press of business has made it impossible for me to give this subject the time and thought it deserves. I also feel that I am but poorly qualified to properly handle a subject of so great importance.

There are so many architects in this country today that it is impossible for me to say positively what views others hold on this question. However, the best way to learn what other men think, whether they be architect, manufacturer, dealer or prospective builder, is to go to them with the question at hand and ascertain their views.

I have made an effort to do this, with the result that I became convinced that my own experience in the use of your product and opinion as to its merits reflect in a fair way the attitude of a majority of my brother architects.

My attention was first called to sand-lime brick in Birmingham, Ala., where I was in business till 1904. A new plant had been established there and they introduced their product in open competition with other brick.

For several reasons (which it may be well to mention) prospects were exceptionally bright for this new enterprise. In many sections of the south there is no suitable clay from which to make a good pressed brick, consequently it was necessary to import all first-class building brick from the north. This naturally made the price of brick high and created a market for the new product. Other natural conditions favor the future of sand-lime brick. for in and around Birmingham there were fine deposits of silica sand and the finest of marble lime, the two principal ingredients of sand-lime brick. Thus you see that, with the natural conditions favoring this new enterprise, it was only necessary to unite good management and capital with these natural resources and its success would be assured.

The problem which faced this new company, and which has, I believe, been the obstacle in the path of every sand-lime brick company, was to get the architects to recognize their product, and convince the public of its merits.

How could they convince the architect that this brick was as good as others; that it would stand the ravages of time and the attack of the elements, and that it would produce artistic effects.

Clay brick has stood the test of years; it had satisfied the public and readily adapted itself to the various needs of the architect, but it was expensive. Here was a new product, costing less than its older rival; would it meet the requirements and stand the test? It must have merits which would win the recognition and support of the architects.

The successful practice of architecture is dependent upon many qualifications. One of the most essential of these is the ability of the architect to appreciate the value of new inventions or products in all branches of the building trades. However, his decision relative to such matters must always be influenced by his relation to his client, which, as you well know, is that of mediator, or in many cases the final judge of what is to his client's best interest. To protect our client's interest we must know how to advise him at all times and under all circumstances. We are responsible to our client for the trust he has placed in us and in the advice we give him we must be certain of our position.

Then, too, our reputation is at stake. We must be certain that we are right; in spending the money of our clients we must be even more careful than though we were using our own capital. We cannot afford to give advice unless we are sure the result desired will be accomplished.

What then should the architect do if he is called upon to recommend a new product?

He should first investigate and satisfy himself that the product is good; that it will fulfill all essential requirements and that it is in every way what it is claimed to be.

Here then is the problem, and the architect must be the judge. He must protect his client's interests on the one hand, and the interests of the producer on the other.

His adverse judgment may mean the ruin of a new industry in which a small fortune is invested. Is it not essential then that he investigate even in detail before committing himself?

Here has been the great trouble with many members of our profession; they have not investigated. They have passed judgment without proper consideration, and instead of aiding a new and worthy enterprise, they have hampered its progress.

When sand-lime brick was first brought to my attention I was confronted with statistics and government reports; I was told the brick had been used in Germany for a hundred years with the best of results. All this evidence was shown to prove that the brick was the equal in every respect to the clay product. Government tests and reports meant more than any other thing, but the one fact lacking was the actual knowledge of the test of time.

To satisfy this grave doubt I saw this brick tested for strength and by fire, water and freezing, and but one verdict could be reached: that it was the equal of any clay brick on the market. The result convinced me of the advisability of using the brick and I have since used it or advised its use in several buildings of more or less importance and that, too, without regret, but you, as manufacturers and dealers, must not lose sight of the fact that you will probably have to convince most every other architect of the value of your product and that, too, in much the same manner as you did me, for we are more or less human though some of us are not, being from Missouri.

Our attitude then towards your product is either negative, neutral or enthusiastic, depending wholly upon your ability to present convincing evidence of its merits.

I believe, however, that you will find us open to all reasonable arguments and for the most part willing to give a meritorious article a fair trial and you must depend upon your product to do the rest.

Like every new product sand-lime brick has much to contend with; the prejudice of a prospective customer, even though he be the client of a convinced architect, is sometimes impossible to overcome; the fierce rivalry of competition with an old and established product is often too strong to successfully resist even with the advantage of a reduced cost, and the enmity of labor and other interests are too well known to need any comment by me.

In conclusion, gentlemen, I may perhaps be permitted to offer a little advice; do not use a laboratory-made brick as your sample, but show the actual product of your plant and, if requested, samples of its ingredients; make an effort, by concerted action if necessary, to overcome all unjust competition and the spiteful actions of those who would be gainers thereby, but be careful in so doing that you transgress no laws or commit no acts which would compromise you in the eyes of those of our profession to whom honor means more than wealth and a satisfied client more than new business.

It is needless for me to suggest that you use every possible effort to improve the quality and value of your product. Your presence here indicates your desire to do this. Let me suggest that all efforts made towards the standardizing of your product both as regards size and quality and any attempts you may make to produce various texture and color effects will in my opinion be steps in the right direction and will, if successfully accomplished, materially increase its sale.

There is one defect in your product which should receive your earnest and careful consideration, namely, its tendency to spall on the edges and corners. I do not presume to state the cause or causes of this tendency; it may be due to a lack of homogeneity; it may be the result of the processes of its manufacture, or it may be due to failure to properly season or cure the finished product; but whatever the cause, the elimination of this defect will, in my opinion, materially enhance the value of and the market for sand-lime brick.

Your product is comparatively unknown, your industry in its infancy, your future is and will be entirely dependent upon your own actions and efforts taken both individually and collectively. Your market, however, is world-wide and personally I see no reason why your prospects for success are not as good as those of any other comparatively new product, and I believe that I am safe in assuring you, gentlemen, that those members of our profession whose friendship is really worth having, that is, those of us who, after being convinced of its value and artistic merits, are willing to stand by their judgment and use your product solely because of their belief in it, may be depended upon to extend to you the cordial sympathy and aid which we presume you desire to secure and without which your ultimate success will undoubtedly be a question of a far greater expenditure of time, labor and money.

The next topic was insurance. J. L. Jackson, as chairman of the committee on insurance, led the discussion, which resulted in the adoption of the following suggested test specifications:

SUGGESTED TEST SPECIFICATIONS FOR BUILDING MATERIALS IN THE FORM OF BRICKS.

The product shall be subjected to the following tests: Absorption, freezing and thawing, fire, transverse and compression, and the weight per cubic foot and specific gravity determined. Additional tests may be called for when in the judgment of the Underwriters' Laboratories, Inc., it may be necessary.

All tests are to be made at the Underwriters' Laboratories, Inc., at the expense of the applicant.

Selection of Samples.

For the purpose of the tests at least 65 samples, representing the ordinary commercial product, shall be provided.

They may be selected from stock or taken at such stages after manufacture as may be desired by the collector, or made in the presence of the collector at his discretion, but in no case shall the samples be more than twenty-four hours old when taken. The samples shall be approximately 8 inches long, 4 inches wide and 2 inches thick, and in all cases shall be the size of the commercial product.

Information regarding the character and treatment of materials used, the method of manufacture and also samples of raw materials, shall be furnished the collector, if required by the Underwriters' Laboratories, Inc.

The samples shall be tested between the thirtieth and sixtieth day after manufacture.

Tests.

Five samples shall be required for each test, except for fire tests where twenty-three samples are necessary. All tests shall be made on full-sized samples where possible.

All samples shall be carefully examined and condition noted before subjected to any test.

Fermeability and Absorption Tests.

The five samples to be first thoroughly dried to constant weight in an atmosphere of about 250° Fahr. and weight carefully recorded. Samples then to be placed on their faces in a pan or tray of water to a depth of one-eighth inch.

The samples shall again be carefully weighed at the following periods: One-fourth hour, one-half hour, three-quarters hour, one hour and each hour thereafter for a period of seven hours. The level of the water shall then be raised to a depth of two inches and samples again weighed at the following periods: Twelve hours, twenty-four hours and forty-eight hours respectively from the time of first immersion.

Note.—Superfluous moisture to be removed by carefully wiping with a damp cotton cloth before each weighing.

Freezing and Thawing Tests.

Five samples to be immersed to a depth of two inches, as described in the absorption test, for forty-eight hours, and the weight carefully recorded; to be then placed in a refrigerator and subjected to a temperature of less than 15° Fahr. for sixteen hours; to be then removed and placed in water where they shall remain for at least eight hours, temperature of the water being not less than 150° Fahr. nor more than 200° Fahr. during this period. This operation to be repeated ten times, after which the samples are again weighed while still wet from the thawing.

Note.—Immediately on completion of this test, samples are to be subjected to transverse or compression tests.

Fire Tests.

To be made on twenty-three samples as follows: Eighteen to be placed in a panel 4 inches thick by 18 inches high by 24 inches long. The samples to be laid on the 4-inch face in cement mortar with joints broken, having one header and five stretcher courses. The header course to be in the center. The panel to compose one side of a gas furnace suitably constructed to permit of the removal of the panel for water treatment at the end of the fire test. The sample panel to be subjected to fire on one side only for a period of one hour and thirty minutes. Temperature of furnace to be raised uniformly from that of the atmosphere to 1700° Fahr. in about thirty minutes and remain at about that temperature for the succeeding hour.

At the end of the fire test, panel is to be quickly removed from the furnace and a stream of water immediately applied for one minute through a one-half inch nozzle at a pressure of 75 pounds per square inch at the base of the nozzle. The distance of the nozzle from the sample to be twenty feet.

Five samples are to be placed within the gas furnace at the time of the test on the panel and receive the same fire treatmnt as the panel, except that thy are to be heated on all sides. Two samples to be removed at the end of one and a half hours and plunged into cold water of about 50° to 60° Fahr.; the other three to be removed and permitted to cool gradually in air.

After the above fire treatment the condition of each sample shall be carefully noted.

Note.—The fired samples which have been fired on all sides and as many as five samples selected from the fired panel, shall be tested for transverse and compression strength as prescribed, within twenty-four hours. The samples to be protected from the weather.

Transverse Tests.

The samples to be placed flatwise on two rounded knife-edge bearings set parallel seven inches apart. The load is to be applied on the top, midway between the supports and transmitted through a similar rounded edge until the sample is ruptured.

The modulus of rupture shall be determined by multiplying the breaking load in pounds by twenty-one, three times the distance between the supports in inches, and dividing by twice the product of the width in inches by the square of the depth in inches.

Twenty-five samples which have been treated as follows shall be tested:

(a) Five samples which have been thoroughly dried to constant weight.

(b) Five samples which have been saturated as prescribed in the absorption test.

(c) Five samples which have been subjected to freezing and thawing treatment as prescribed in the freezing and thawing test.

(d) Five samples which have been fired on one side only. Samples to be selected from the fired test panel.

(e) Five samples which have been fired on all sides and were quenched and cooled in air.

Note.—This includes all of the samples subjected to fire on all sides.

Compression Tests.

To be made on whole samples. The samples to be carefully measured and then bedded flatwise on blotting paper to secure a uniform bearing in testing machine and crushed. Total breaking load is then divided by the area under compression in square inches.

The following requirements shall be met to secure the approval and classification of the material represented by the samples submitted:

(a) Absorption (being the weight of water absorbed divided by the weight of the dry sample) shall not average higher than 15 per cent. and no sample shall exceed

20 per cent, and the absorption in six hours shall not exceed 75 per cent of the absorption in forty-eight hours.

(b) Freezing and thawing process shall not cause a loss in weight greater than 5 per cent.

(c) The fire and water treatment of the panel must not damage the brick to a greater average depth than three-eighth inch.

(4) Modulus of Rupture must be as follows:

For samples thoroughly dry, average shall not be less than..... 400
And no sample shall fall below..... 325
For samples thoroughly saturated average shall not be less than..... 300
And no sample shall fall below..... 245
For samples subjected to freezing and thawing process, average shall not be less than..... 265
And no sample shall fall below..... 210
For samples subjected to fire treatment on one side only, average shall not be less than..... 250
And no sample shall fall below..... 205

Samples subjected to fire on all sides and either quenched or cooled in air shall fill the above requirements for fired samples.

(a) The ultimate compression strength must be as follows:

For samples thoroughly dry the average shall not be less than.....2,500 lb. per sq. in.
And no sample shall fall below.....2,000 lb. per sq. in.
For samples thoroughly saturated the average shall not be less than.....2,000 lb. per sq. in.
And no sample shall fall below.....1,600 lb. per sq. in.
For samples subject to freezing and thawing process, the average shall not be less than.....1,675 lb. per sq. in.
And no sample shall fall below.....1,500 lb. per sq. in.
For sample subjected to the treatment on one side only, the average shall not be less than.....1,750 lb. per sq. in.
And no sample shall fall below.....1,600 lb. per sq. in.

J. D. Jackson moved that the committee on specifications representing the sand-lime manufacturers should meet with a committee of clay-brick manufacturers, for the purpose of coöperating in establishing a standard set of specifications for these building materials. The motion was seconded and carried.

"Steam, Gas and Electricity Compared for Power Purposes on Sand-Lime Plants" was considered by W. J. Carmichael, Willoughby, O. Mr. Carmichael stated that the average actual horsepower used in operating machinery throughout the sand-lime brick factories of the world was less than 125 and any relative comparison of powers required must be based upon such average condition. Any attempt to actually show a comparison without taking into consideration the necessary steaming facilities for hardening sand-lime products would be unfair. The conclusion of the writer was that unless some unusual condition prevailed in cheapness of electricity or gas, steam (whether generated from coal, gas or other fuels) stands paramount in the operation of sand-lime brick factories.

LIME AND ITS PREPARATION FOR SAND-LIME BRICK MANUFACTURE.

By S. V. Peppel.

Lime and its proper preparation for use in the manufacture of sand-lime brick constitute probably the most important factor in the economical production of a satisfactory building material from sand and lime. Almost any reasonably clean sand will with a good and properly prepared lime make a good brick, but no matter how good the sand, if the lime hydrate is not right you cannot have a satisfactory brick. Therefore it is very important to the manufacturer of sand brick that he not only procure the lime which has the most desirable chemical composition, but also it is very advantageous to get the one which has been burned under such conditions as to make it the most sensitive to slaking, and from such sources, as near as possible, as will permit the receipt of frequent and small shipments, since a very sensitive lime will be at the same time more susceptible to air-slaking during transportation and storage, which, of course, does no damage to the brick, but reduces the efficiency of the lime in the sand-lime brick reaction in the hardening cylinder.

Limestones completely calcined at temperatures not in excess of 1,000 degrees C. produce limes which are the most readily and completely slaked and yield a larger volume of hydrate than lines made at higher temperatures. The plasticity and bonding power of such limes is also greater than those burned at higher temperatures. High temperatures in the burning of lime make a product which is slow in slaking, with a tendency to the incompletion of the reaction.

To the best of our knowledge there is no other industry in which the proper manufacture of lime and its subsequent preparation are so important a factor, unless it is in the sugar industry, which in the main has come to the burning of its own lime, not because they can save money but in order to get the best possible product, regardless of expense.

Observations made by the writer within the last year, using a carefully standardized Fery pyrometer on five or six plants which stand for average conditions of production, indicate that most of the lime put on the market is overburned, because with the exception of one plant the temperatures used were all the way from 1,100 to 1,400 degrees C. These high temperatures are maintained in order to get greater capacity from the kilns.

At the present time anything is considered as lime that will make an appearance of slaking and give some sort of a bond in mortar. The time will come, however, when the man who makes a sensitive lime and delivers it while fresh will have the trade, and eventually there will be established standard tests and requirements on which purchases of lime will be made, just the same as is the case for many of the raw materials for use in other industries.

Sand brick manufacturers should either burn their own lime or else contract for it under definite specifications as to its condition and composition on its arrival at the plant, because when the lime is just right 7 per cent will often do the work of 10 per cent of an imperfectly burned lime or one that has been badly air-slaked or overburned. A lime with a small amount of core is more desirable for your purposes and will go further than one that is overburned or air-slaked badly.

When certain constants for a given lime are once established much may be learned about the comparative quality of the lime from car to car by very crude tests and inexpensive apparatus, which can be operated by anyone of ordinary intelligence when properly instructed.

If a definite quantity of pure calcium oxide which has not been overburned be agitated in a definite amount of water at any given temperature, the slaking will in a definite period of time reach a maximum temperature. The amount of the increase of temperature will depend on the composition of the lime as well as on the amount of air-slaking which has taken place. The maximum temperature which can be obtained decreases with the increase of the percentage of magnesia as well as with the increase in the amount of air-slaked lime present; therefore it would be necessary to establish constants which represented the maximum heat generated for the various types of lime or for the one in use at any particular plant. The time period required to reach the maximum temperatures under standard conditions would be a guide to the burning conditions. If overburned, the slaking will be slower and more time will be required to reach a maximum temperature, and when working in a crude way with no allowances for radiation the maximum temperature will be less, due to greater losses by radiation by the extension of the time in which the hydration can be fully completed.

If testing stations or laboratories were available, the specific gravity, loss on ignition at high heats and the total impurities might be used as guides in the selection of the limes and in the control of shipments.

I am fully satisfied that the members of this association could advisedly spend considerable time, money and energy on this matter and establish a few standard requirements, and develop some simple apparatus for use at each plant so as to test each car of lime received, if you do not care to go so far as to equip yourselves sufficiently to be able to determine which of a number of limes, available at about the same cost, would be the most economical to use. The laboratories are always available for the latter, so that it is not so important as some means of control after the laboratory has shown which lime is the best and the maximum constants for that lime that can be obtained by crude tests at the plant on each car received, and done at almost no additional expense. If the lime manufacturer has a few cars condemned and thrown back on his hands and knows you are testing his product before use, he will be more careful in what he sends you.

This matter is most important because, in nearly every instance where desirable sand brick locations are found, limestone is absent, and, again, most sand-brick plants today are not large enough to consume sufficient lime to make it economical to manufacture lime for this purpose alone. A single kiln of modern type produces eight to ten tons daily, and for an economical plant there should be at least four to six kilns.

Lime Manufacture.

Great strides in the way of improvement in lime manufacture have been made in the last few years. This has come about through an awakening of the manufacturers to the fact that they were no farther ahead than they were fifty years ago and had just followed in the footsteps of their fathers. So when it became necessary for many plants to change from wood as fuel to coal they were all at sea as to how to do it and had no idea but what a kiln that was a success with wood would do as well with coal. But they soon found out that such was not the case, and blamed it all on the coal, and said that good lime could not be made with coal. There were those, however, who persisted in their efforts and soon found that by modifying the kiln lines, the furnace dimensions and draft conditions a good lime could be produced with coal as fuel and at a reasonable cost.

About this time the National Lime Manufacturers' Association was formed, and, through its medium, a mutual exchange of experience and ideas was brought about, aiding materially in the promotion of individual investigation and experiment, which has been very productive, since all new plants are being put up along modern lines. Instead of making extensive repairs on old and inefficient plants, new ones are being put up and the old ones abandoned. There has also been a strong tendency to centralization of manufacture at the most economical points of distribution, where the best product of each type of lime could be produced economically.

Another evidence of progression in the industry is the fact that today many of the manufacturers have so improved their methods of accounting that they can tell you the cost at almost any point in the operation, while ten years ago the average manufacturer could hardly tell you whether he was in debt or not, and sometimes was very uncertain about that. What it cost him to make lime and deliver it he guessed at, and sold it at any price that he heard that his neighbor manufacturer was asking for it, or at a little less. But association and organization have materially changed all this, and the lime manufacturers of today bid fair to be a progressive and aggressive lot of fellows in the future. They are, however, only just beginning to realize that the application of the same technical methods which have introduced so many economies in other industries will be of benefit to them and save them money. As a result of this, at some plants the fuel cost has been cut completely in two with no additional labor cost. The fuel cost today varies widely at different plants of approximately the same size. Sometimes it is the kind of fuel used; again it is the location of the plant, and in other cases it is the construction and operation of the plant. Small plants almost invariably have higher costs for both labor and fuel. Especially is this the case on the labor end of the cost of production. The total cost of production ready to load on the cars in Ohio is approximately as follows for bulk lime, and probably represents a fair average for the Central West:

	Cents per barrel.
Fuel	7.45
Labor for all purposes	13.70
Fixed charges	4.00
	25.15

This would make the lime cost the manufacturer, without the cost of labor for loading and interest on investment and selling expenses, about $2.50 per ton in bulk. When shipped in barrels the cost will be from $2.10 to $2.50 additional to the lime manufacturer. The fuel cost given above is the total fuel for the quarry, and the plant as well as for the burning of the lime. Very large and well managed plants do better than this, and all small plants (say, two or three-kiln plants) seldom reach this efficiency.

High fuel costs are often due to excessive radiation caused by faulty construction of kilns; i. e., thin walls on kiln, and especially on furnaces. In other cases it is caused by the excessive use of cold air. In one case, which came under the writer's observation, by a reduction of the air excess the same capacity was maintained with approximately 50 per cent of the fuel formerly used.

The sand-lime brick manufacturer should purchase, whenever it is possible to procure it, a lime that has less than 2.5 per cent of total impurities. He should also, whenever it can be had at a reasonable price, use a lime that has not less than 94 per cent calcium oxide, and the nearer 100 per cent calcium oxide it is the better will it be. He should also have a lime that has been very recently burned, but it should be one day old before slaking, since hot lime right from the kiln does not slake so freely and completely as lime that has cooled for twelve hours or more.

BY-PRODUCTS IN THE SAND-LIME BRICK INDUSTRY.

By Clark Mellen.

In the report of the Department of the Interior that has recently been circulated it is stated that 90 per cent of the sand-lime brick output for the year 1906 (statistics being taken from those plants that responded with reports) were commons. I think those of us who have been in the business a year or more realize that under average market and manufacturing conditions we cannot profitably compete with common clay brick. It should, therefore, be the effort of all to restrict their manufacture to face brick until the demand is supplied. There can be no doubt that with the right proportions of the best raw materials, correctly prepared and pressed, we can produce a high-grade face brick. But there is a further step which is equally essential to our success—to be able to market our maximum capacity output at remunerative prices. Assuming that the output of the average plant should be not less than 15,000 No. 1 face brick a day, with capable superintendence we can reckon on a monthly output of, say, 350,000 face brick. I rather imagine there are few of us so fortunately situated as to be able to sell 350,000 uncolored face brick per month the year round, and so we are confronted with the problem of how to keep our plants profitably operating when we have reached the digestive powers of our markets for face brick. This brings me to my hobby—the manufacture of by-products.

I have great faith that in a very few years we will learn how to successfully manufacture artificial stone, such as water tables, door and window caps, window sills, coping, cornices, etc., as well as discover how to successfully enamel and make a speckled brick. Drain tile, flue linings, etc., can doubtless also be made. But the most important of the by-products for us to perfect is the artificial stone. I will confine my few remarks chiefly to this branch of the by-product.

There are a great many manufacturers of machines and appliances for making artificial stone, and, of course, a many times greater number using these machines in turning out such stones of cement and sand. Aside from the color and perhaps one or two other drawbacks this cement stone should find favor everywhere, and there is practically no limit to the variety of designs and shapes, in competition with natural stone and terra cotta. We who have experimented to any extent know that we can produce such stone at our plants cheaper than the cement man, where he pays $1.75 or more for cement, and where we have to pay not over $7 per ton for lime. But though our material is more attractive in color, and more uniform than cement stone, we have a serious problem to overcome in tender edges and corners. If we can overcome this drawback I have no hesitation in expressing my confidence in the complete commercial success of artificial stone manufactured with sand and lime. How are we to proceed to solve the problem?

It is my private opinion that the members of this association should take this question up with the interest it certainly merits and authorize a committee specially appointed by the chair to confer immediately with some competent and reliable chemist to ascertain what the cost of investigations covering a period of, say, three to six months would amount to, if possible, on a basis of a nominal charge for his time if unsuccessful, and a liberal compensation if successful in overcoming the above mentioned difficulty. The committee's report with its recommendations can then be communicated to our members and leave each one to decide whether he will agree to contribute his proportion of such expense. It is no doubt true that there is a great deal of variation in materials at our plants, but I should think it would be quite possible to make the by-product a success at all, or most all, plants, if the chemist can tell us how it can be accomplished with one set of materials. In view of the fact that without any knowledge of chemistry and little scientific assistance, after several months' experimenting in a rather primitive manner, I have succeeded in greatly improving the edges of some artificial stone that we have made by applying a simple insoluble wash, I am justified in feeling very sanguine that a clever chemist should be able to show us how we can obtain the desired result on a practical and commercially successful basis. If the treatment of the material acted only as a temporary protection of edges, etc., in handling and transit from the plant to the wall, we would have made considerable progress.

The enameling of our brick should not prove a difficult process. Many of us are near enough to some pottery works to make our own experiments, enabling us soon to learn how best, if at all, we can develop this highly profitable branch of the trade.

I trust I have succeeded in arousing you to the importance of giving this subject your most careful consideration to the end that you will all actively support the movement.

P. L. Simpson, Chicago, delivered an interesting paper on "Important Factors in Securing Density." He stated briefly the conditions necessary were a pure, clean and highly siliceous sand, with its grains variable in size, a lime perfectly hydrated, the proper mixing of the sand with the lime so that each particle of sand will have a coating or film of lime and enough pressure to the mass so that each grain of sand is pressed together. The omission of any one of these conditions endangers the ultimate desirable result. Consideration of these different points was

"The Association; Its Work and Policy" was the title of a paper read by H. de Joannis, Chicago.

DECEMBER 6—MORNING SESSION.

The morning session commenced with the paper on "Errors in Manufacturing Operations and Their Remedies," by James F. Hobart, M. E., Willoughby, O. This able paper covered twelve classes of errors to which sand-lime factories are liable from the inception of the project to the success or failure of the plant. These were: Inception, location, equipment, construction, system, lime, sand, water, operation, capital, superintendence and selling.

A paper on "How Sand-Lime Brick Should Be Made, and a Practical Method of Preparing the Material for the Press" was read by J. H. Van Glahn, Toledo, O. Mr. Van Glahn emphasized the need of proportioning the sand into different finenesses and experimenting as to the proportions of each which would produce the best result. He advocated the manufacture of hydrated lime by the sand-lime brick-maker and the catering to the needs of the lime trade with this product, so that the profits derived from it would pay for the lime used in the manufacture of the sand-lime brick. Some discussion then followed on the best methods of lime storage, and successful results were reported with the use of steel cylindrical tanks, standard oil tanks and timber tanks tinned inside.

The reports of the committees on representation, insurance, resolutions and nominations then followed.

Report of the Committee on Representation.

Your committee appointed for the purpose of dividing the territory into districts beg to make our following recommendation:

That the United States, Canada and Mexico be divided into five districts, viz., Eastern—Comprising the New England States, New York, Tennessee, New Jersey, Delaware and Eastern Canada.

Southern—Indiana, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi, Tennessee and Kentucky.

Central—Minnesota, Wisconsin, Michigan, Iowa, Missouri, Illinois, Indiana and Ohio.

Western—Montana, North Dakota, South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, Texas, Arkansas, Louisiana and Mexico.

Pacific—Washington, Idaho, Oregon, California, Nevada, Utah, Arizona and Western Canada.

We further recommend that the executive committee be increased to five members and that the president appoint as his executive committee a member to represent each district, such member to keep in touch with the local plants in his district and do such special work as he may be called upon to do by the officers of the association to promote the general good of the industry.

Report of Committee on Resolutions.

WHEREAS, In certain localities the present method of weighing loaded railroad cars, (more particularly in our industry those loaded with coal and lime) is ineffective, inaccurate and unjust, owing to the impossibility of connected cars being weighed in such a manner as to secure exact individual record of their weight.

WHEREAS, These cars en route being delayed frequently are subjected to pillage and the shipper in consequence does not receive the amount of material stipulated in his contract; therefore, be it

Resolved, That in such cases this association demand from the railroads the right to purchase materials according to weights at point of delivery and, furthermore, that should such request not receive prompt attention that action be taken by the executive committee to bring this matter in a prominent way before the Interstate Commerce Commission and such other state bodies as may have control of these matters, and this association requests of coöperation of other associations to that end.

Resolved, That the thanks of this association be expressed to the Columbus Granite Brick Company for the courtesies it has extended to us and its handsome souvenir buttons; also that we express our appreciation of the good services of our officers during the past year, the work of the insurance committee and coöperation of those who have contributed so ably to our program, thereby making the convention one of the most successful we have held.

Resolved, That the thanks of this association be given to the Chittenden Hotel and its courteous manager, Nicholas A. Court, for the use of the exhibit room and convention room and also for his general assiduity in promoting our general comfort.

Resolved, That this association specially recognizes the support of J. Y. Bassell, secretary of the Board of Trade of Columbus, and realizes that he has made good on his promise of last year.

Resolved, That the association publicly thank T. M. Merriott, the Columbus architect, whose broad-minded paper expressed so ably the true relations which should exist between the architect and the sand-lime brick manufacturr.

The committee on nomination presented the following officers for 1908 to the meeting: President, H. O. Duerr, Wilmington, Del.; vice-president, F. H. Smith, Wilmington, N. C.; secretary, F. K. Irvine, editor of ROCK PRODUCTS, Chicago; treasurer, W. E. Plummer, Buffalo, N. Y.

The papers read at this session of the association were of unusual merit. It is impossible to print them entire in this issue, but ROCK PRODUCTS hopes to publish them all in the January and succeeding numbers.

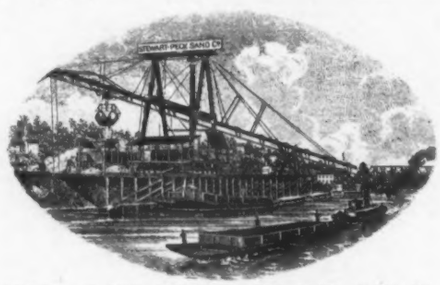
Sand and Gravel.

Sand Company for Nebraska.

HASTINGS, NEB., Dec. 15.—Articles of incorporation have been filed with the County Clerk creating a new company, to be known as the J. H. Ferguson Sand Company. Its purpose will be the mining of sand at Leroy and manufacturing it into cement blocks, brick and other sand products. The company is capitalized at $15,000, and its promoters are J. H. Ferguson, Lillie F. English, Earnest A. English and James A. Finnerty.

Missouri Concern Shows Progress.

KANSAS CITY, MO., Dec. 15.—Dropping in at the office of the Stewart-Peck Sand Company in the Kemper Building, a representative of ROCK PRODUCTS found Mr. Charles C. Peck, general manager of the concern, at his desk, and a very busy man, too, but between the telephone and his mail Mr. Peck found time to mention a few facts about his firm and their operations. He said: "Our company has been operating for over twenty-four years. We are now working three plants. We have two plants on the Kaw River and one on the Missouri River, the latter having a capacity of eighteen hundred cubic yards per day. One feature of our transportation facilities is three specially equipped boats for towing sand



OUTFIT OF THE STEWART-PECK SAND COMPANY, KANSAS CITY.

in our dredging work. We also have special sand cars for transporting our product to our five different yards located in Kansas City territory. Our sand is washed and thoroughly screened before it is shipped. We are supplying sand for the new Montgomery Ward Building, Bank of Commerce Building and several other new structures now under way, and we furnished the sand for the Long Building, recently completed."

The immense quantity handled and special equipment make this concern one of the largest of its kind in the Southwest.

In the Missouri River.

ST. JOSEPH, MO., Dec. 1.—In common with the larger cities on the river, St. Joseph has a company engaged in dredging channel sand. The Pioneer Sand Company was established five years ago. Their plant is situated at the foot of Atchison Street and their office and uptown delivery station is at the foot of Francis Street. Though forced to shift their position, owing to the drift of the sand, they operate principally at a point about two miles below. They have a revolving crane and a boat equipped with a Morris Machine Works sand pump. The company are engaged in making some extensive improvements to their plant for the purpose of carrying a larger stock of sand to enable them to give prompt delivery not only to their local, but also to their growing shipping trade. They are furnishing sand for the new hotel and also for the big new freight-houses of the Rock Island and Missouri Pacific Railroads.

Fire on November 10 at the Pittsburg Sand Company's plant at Berkeley Springs, W. Va., caused a $2,000 loss. The supposition is that hot sand passing through the elevators caused the fire.

The Interstate Sand Company of Kansas City, Mo., capitalized at $15,000, has been incorporated by C. B. Ashbaugh, William Heagy, C. F. Smythe and others.

Operates Crushing Plant.

LOS ANGELES, CAL., Dec. 15.—The Pacific Rock and Gravel Company, W. L. Hodges and F. Foell, proprietors, 216 Citizens' National Bank building, are operating a crushing plant on Macy Street. Rock used in the crushing is shipped in from outside points. A No. 3 Gates crusher is used, driven by a 35-horsepower gasoline engine.

New Company Has Washed Product.

COLUMBUS, GA., Dec. 15.—The Bull Creek Sand and Gravel Company, No. 5 West Twelfth Street, are operating a sand and gravel pit at Bull Creek, Ga. Their product consists of washed building, filtering and concrete sand; also washed concrete, filtering and roofing gravel. The officers of the company are: Rhodes Browne, president; C. E. Battle, vice-president, and Ernest L. Hill, secretary.

Discovers New Sand and Gravel Bed.

LINCOLN, ILL., Dec. 5.—Work of throwing up levees on Chautauqua Lake have brought to light the fact that a vast quantity of sand and gravel underlies the bottom lands of the Chautauqua grounds. There are at least thirty acres of gravel and sand surface on the grounds, and it is unusually clear.

Perry Sand Company Organizes.

BUFFALO, N. Y., Dec. 15.—Articles of incorporation were filed yesterday afternoon by the Perry Sand Company, of this city. The directors named are: Daniel J. Perry, 36 Fargo Avenue; William J. Hingston, 2 Spoulding's Exchange; George D. Perry, 353 Prospect Avenue; Morgan C. Perry, 250 West Avenue; Albert Webster, West Henrietta, N. Y.; Andrew Webster, Batavia, N. Y., and Howard Gerkin, 421 Hoyt Street. The capital stock is listed at $10,000, and business will begin with $5,000 capital.

Fire Does Slight Damage.

SPRINGFIELD, ILL., Dec. 1.—Fire at the offices of the Springfield Cement and Sand Company slightly damaged the roof of the office. The fire is supposed to have started from an overheated stove.

Sharon to Have Sand Company.

SHARON, PA., Dec. 7.—Charters were issued to the Sharon Sand Company today, capital stock being given as $10,000.

Interesting Experiment in the South.

BILOXI, MISS., Dec. 4.—Prof. A. F. Crider, State Geologist of Mississippi, has recently been making inquiries and tests for the purpose of determining the value of the Gulf Coast sands for the making of glass. These sands are of the best quality for this purpose and would produce a glass that would be unrivaled.

Gravel Pit Works Full Time.

NEWMAN, CAL., Dec. 10.—The Prestimba gravel pit, northwest of this place, is being worked to its full capacity at present. An average of from three to five train crews are engaged in loading and hauling gravel, and about eighty carloads a day are being shipped.

New Gravel Pit Near Leesburg.

GOSHEN, IND., Dec. 15.—U. S. Lidgard is opening a gravel pit near Leesburg, Ind., for the township. He has temporarily abandoned work on the Warsaw-Peru interurban grade.

Rumor is Denied.

MARTINSBURG, W. VA., Dec. 1.—The officers of the West Virginia and Pennsylvania Sand Company at Berkeley Springs deny the report that the company is bankrupt. They are only resisting a disputed claim.

Good Gravel for Road Bed.

SEYMOUR, IND., Dec. 12.—James DeGoyler has opened a gravel pit on the farm of Henry Dischmeir. The coarser gravel is from a half to three-quarters of an inch in diameter, and there is enough sand and finer gravel mixed with this to make a solid road when it packs down.

New Sand Company Formed.

MARTINSBURG, W. VA., Dec. 1.—N. G. Speer, who recently disposed of his interest in the Speer White Sand Company, of Berkeley Springs, has formed a new company and opened a mine on the John Turner property. The mine and mill will be in full operation before spring.

The Selection of Concrete Aggregates.

By S. W. Curtis.

Read at the Chicago Cement Show.

There are three essentials in the selection of concrete materials, the first of which is purity, the second of which is purity, the third of which is purity—the first purity being in the perfection of the cement, the second in the quality of the metal, and third in the undefiled water.

Portland cements are not all alike, the product of each mill having its own peculiarities that must be understood by the mechanic to secure the best results, the most common evil being lack of quick action in crystallization developing strength enough to withstand the steam and boiling tests. While this is a supreme test on which Portland cement is accepted or rejected, it is of slight importance in practical work, and is the point upon which many Government engineers have been discredited. Government work is large work, and cement is rushed out of the mill before it is cured, subjected to tests, will not boil, and is rejected. The knowing owner of the rejected cement calls for another test, and by the time the red tape has been gone through with, the cement is properly aged and will pass the second test almost always at a highly favorable mark.

To prove this point about Portland cement, take a sack of cement that will not stand the steam or boiling tests, spread it out on the floor in a reasonably dry room and turn it every day for ten days. In nineteen out of twenty cases the cement will pass and be high in breaking strain. Often the architect or engineer who will reject cement because of its failure to stand the steam and boiling tests, will specify, permit to be used, and in his own work use a mixture of from 10 per cent to 20 per cent of hydrated lime or lime putty, with the claim that it waterproofs the work. Not one piece of such concrete that has ever been made would stand the steam or boiling tests at time of making.

A pulverized product of air-slaked lime that has become absolutely inert would help some in the way of producing a metal without voids, but the lime's known avidity for water and moisture would keep such concrete damp throughout, in moist places. It would not necessarily follow that such concrete would not hold back water, and in fact so retard the movement of water through it, that the natural taking up of the moisture from the exposed surface by the air would give the surface a dry appearance. Any unslaked particle of the high burned lime in Portland cement, or in concrete, will expand when moisture reaches it, putting the complete mass onto a tension; giving it a metallic ring, more and more clear in tone as it nears the bursting-point. Up to this point it calls for the highest commendation, but to pass that point means disintegration and condemnation.

Some cements show a flash set. This comes so quickly that the surface becomes hard before the water is fully mixed with the cement. This flash set is not detrimental to the cement, as the initial and final set follow in due time, and after curing the strength is all that can be asked for.

In the selection of the metal, the hardest, roundest water-washed stones that can be secured will give the strongest concrete. Portland cement should not have any duty to perform except to cement the stones into one conglomerate mass. To do this the aggregates should be so proportioned that all voids would be filled were the aggregates assembled before the cement is added. There can be no fixed rule of the proportions to be used for a standard of the materials that can be readily secured in Chicago. We all talk 1 cement, 3 torpedo sand or limestone screenings, and 5 of pit-run gravel or crushed limestone. The torpedo and pit-run gravel will give just as much stronger concrete than the limestone as the gravel is harder and stronger than the limestone, plus the weakening of the limestone by cracking and not breaking in the crusher, such cracks not being open to receive the cementing solution. In proof of this, all of the thirty-five miles of tunnel under our city is made of pit-run gravel, after having tested the softer stone. Also, at the time of the burning of the Armour & Co. lard refinery, some of the foundation piers were of limestone concrete, and some of pit-run gravel. When the men were set to cut them out, the man on the limestone pier would, with two strokes of the hammer, break off as much as the man on the gravel pier would get with ten strokes of the hammer. In either case the concrete would break through the stone, showing the union to be stronger than the natural stone itself.

The 1:3:5 mixture will be improved in either metal by adding one part of a fine clean bank or beach sand, and in large work by adding one or two parts of roundheads or cobblestones. Loam or fine dust or slimy soil will keep the cement from crystallizing with a metal of any kind; therefore gravel when taken from its natural bed should be thoroughly washed and assorted to sizes.

The limestone when crushed should be assorted to sizes, and, as it falls from the screens, should pass through a strong air blast, that will entirely free the large stones from the impalpable dust. The sizes should be purchased separate and of different sizes for each special kind of work, then assembled to completely fill the voids without the cement; then, after the mixture is thoroughly mixed in a dry state, between 8 per cent and 12 per cent by weight of the mixture of pure water should be added, making a semi-dry mixture that will tamp to place without jellying or showing any water on top. When tamping is done the surface should be scarified by the use of a rake or a roughing tamp, before the next batch of material is added. Surface that is to be left over night should be left in this roughened condition and swept over in the morning with a stiff broom or wire brush. A cream of neat Portland (no matter how thin a coat, so it covers) should be applied before beginning the day's work, then there would never be complaints of laminations and of a stream of water through at the day's joining line. All of these are points of importance in getting the best results obtainable, but are of no practical use as a standard for ordinary work, because all of us are governed by the commercial value, and from an economic demand must, in all work of volume, use the material that is at hand. Portland cement has so much power than it is credited with than in all such work the reliable contractor can tell at once what proportion of cement is needed with his cheapest and most economical aggregates to secure safe results, most causes of failure being because of the laborer not following out the instructions as given him by his employer.

To show the importance of purity in material, allow me to quote from the report of 1905 of Committee "C" on Standard Specifications for Cement Testing of the American Society for Testing Material.

Standard Sand, section 45: "The committee recognizes the grave objections to the standard quarts now generally used, especially on account of its high percentage of voids, the difficulty of compacting it in the molds, and the lack of uniformity. It has spent much time in investigating the various natural sands, which appear to be available and suitable for use."

Section 46: "For the present the committee recommends the natural sand from Ottawa, Ill., screened to pass a sieve having twenty meshes per lineal inch, and retained on a screen having thirty meshes per lineal inch." (The Ottawa glass sand is pure white and 99.8 per cent pure silica.) The committee is right in the choice of a regular-sized grain of sand, and in making the rule that the briquettes shall be broken as soon as taken from the water for comparative tests, but in neither case do they obtain the best results possible. A briquette cured and then dried out before breaking will show a gain of nearly 20 per cent in strength, and the mixing of white sand that will pass through the twenty-mesh, with the finer from the same sand-bed (the grains going down to 100-mesh) will give stronger and denser results.

By selecting the pure aggregates in the right proportion and by incorporating a mixture of two waterproofing compounds, we have produced a practical commercial compound of Portland cement, and of Portland cement and sand, that can be delivered in cloth bags in rain, or left piled out of doors without any protection whatever for a month at any season of the year, without hardening or damage, and on mixing with clean water only, have it set up as it should, showing for the sanded goods a breaking strength of 105 pounds in 24 hours in air. Twenty-four hours dry, 105 pounds; 24 hours dry, 6 days wet, 195 pounds; 24 hours dry, 6 days wet, 10 days dry, 550 pounds; 24 hours dry, 6 days wet, 10 days dry, 416 pounds. Average, 483 pounds. These tests have been made from a sack of sanded material left over in making a ton shipment. Four months after the goods were made the cloth sack was put out on the flat roof of our building and left exposed to the sun, rain and running water for six weeks. When opened the material was found to be perfectly dry and workable.

Regarding the quantity of water, the greatest care should be exercised to not overload the mixture with water, because water is non-compressible, and any water in excess of that needed to moisten all particles will form globules in the concrete. These, when taken up by the concrete in the curing process, leave open spaces in the work. Soft concrete will not tamp or stay in place, and when forced down at one point will squeeze the water out through the mixture, taking the cement with it, leaving clean sand and gravel not cemented. This fact regarding excess of water makes an especially difficult point to overcome in reinforced concrete. To have a perfect union between steel bars and concrete, the bars should be free from oil and scale, and the cement should go next to the bars in a very soft state and without very much, if any, large stone near the steel. This will best be done by using the dry mixture up to the steel bar; then cover it with soft and rich material, following with the dry material. Then the tamping will give the coating of strong cement next the steel and eventually become part of the steel, while the dry mix will absorb the excess of water and distribute it through the entire mass. Where expansion joints are left in reinforced work, if the material is made up as soft as in ordinary work, the excess of water as it goes away will cause the joints to open up, in some cases as much as from three to four inches. This would not occur with the dry mix. An excess of water left in the surfacing coat will, when it evaporates, leave hairlines and surface checks. These are not necessary in material, no matter how rich it may be made, providing it is densed all the way through by troweling when in the putty stage. A floating vegetable dirt in the water injures the cement.

We are on the outer edge of the possibilities that are in Portland cement. All the effort of the manufacturing interest has been centered on producing cement that can be used in ordinary ways, by ordinary laborers, without extraordinary misfortunes. This work has now been accomplished, and now is a ripe time to take up the study of what can be done to so change and improve Portland cement for certain purposes that it can accomplish new and at present unknown results, and then fit such results to local conditions and aggregates.

Status of the Cement Industry In Iowa.

By R. G. Coutts.

Read at the Chicago Cement Show.

The resources of Iowa have been greatly underestimated and misunderstood. She has been regarded by those who do not know her as being simply and solely an agricultural State—good for nothing but to raise corn and pumpkins and fatten hogs. Well, now, we are proud to admit that she is an agricultural State and that her superiority along this line over all other States is fully recognized. The crop bulletin just issued last week shows that, notwithstanding the cold, wet season of 1907, her corn crop alone is shown to be 246,898,640 bushels, valued at $108,635,322, and the total value of all her crops amounts to $322,715,905. However, as these figures represent sums that are much larger than the average cement-user is in the habit of handling, they do not mean much to us. And while it is true that Iowa, as an agricultural State, stands at the head, yet we find in referring to the United States Census for 1900, that Iowa has within her borders 14,819 manufacturing establishments and the amount of the output of her factories reaches the sum of $164,617,877 per annum.

However, with all this array of figures that in a measure show the greatness of her resources, I am ready to admit that along the line of industry toward which our attention is directed she has seemed to come far short of measuring up to her possibilities. But I find that this supposition is more imaginary than real, as I shall presently show.

While Iowa has not been a cement-manufacturing State, she has, for the past ten years, been one of the largest consumers of cement in the United States, and during the past three years she has been steadily and persistently laying plans by which she could furnish her own supply.

When the manufacture of Portland cement crossed the Allegheny Mountains, and Ohio, Michigan, Indiana and Illinois fell into line, when the people raised the shout, "Westward the star of Empire takes its way," with Portland cement in the van, the optimist was well satisfied that sooner or later that star would shine over Iowa. When the star reached Iowa, however, it got under a cloud and was soon discovered twinkling over Kansas and Missouri on the south and Dakota on the north, while the pessimist said: "I told you so. You cannot make Portland cement in Iowa." Now we are glad to state that this prediction is about to be exploded.

Immediately after the organization of the Iowa Geological Survey, the men placed in charge of the work having had their attention called to the enormous growth of the cement industry, to the fact that this material was becoming a necessity to the prairie States, and while Iowa, who had become an extensive user, had not contributed anything toward the supply, they then set their brains to work at once to see if something could not be done toward relieving these conditions. This work has been prosecuted with vigor mainly under the personal direction of Prof. S. W. Beyer, head of the Mining Engineering Department of the Iowa State College.

At the end of several years of most persistent and energetic labor Prof. Beyer was able to announce, some two years ago, that near Mason City he had been able to locate all the necessary raw materials for the manufacture of Portland cement. Here the conditions are ideal—an inexhaustible supply of raw materials, cheap fuel near by, and splendid railway facilities, and a splendid market right in sight for all the cement that could be produced.

As soon as this announcement was made a company was organized, headed by that veteran cement manufacturer, W. F. Cowham of Jackson, Mich., and made up of the substantial business men of Mason City and the cement-users over the State. Plans were made for the erection of a modern cement plant with the latest machinery and appliances, and no pains have been spared to make this one of the very best plants in the whole country. The plant is practically completed and will have a capacity of 3,500 barrels per day and will be known as the Northwestern States Portland Cement Company.

Investigations and research work did not stop here, however. By an act of the Iowa State Legislature in 1904, the Iowa Engineering Experiment Station was established in connection with the Iowa State College at Ames, for the purpose of carrying on investigations and giving out information helpful to the industrial interests of the State. The work has been carried on under the direction of Prof. A. Marston, head of the Civil Engineering Department of the same institution, and the work accomplished by his department in conjunction with the Department of Mining Engineering has been of untold benefit to the development of the cement industry in the State.

Besides the plant of the Northwestern States Company, at Mason City, investigation has uncovered large deposits of stone and shale west of Des Moines, and last spring a company was organized known as the Iowa Portland Cement Company. This company commenced work on the erection of a cement plant during the summer just past. The company is made up of substantial business men and men of experience in the cement business, and they expect to have their plant ready for business this coming season.

Still another site has been located at Harvey, in Jasper County, and a company known as the Hawkeye Cement Company has been organized and has already gotten materials on the ground for the erection of a mill at that place. These will make three modern cement plants in our State, and besides all of these, prospectors are at work in Scott and Webster Counties determining the character and value of the raw materials for the manufacture of Portland cement. At present I am unable to state just what success has been met with at the two points above mentioned.

However, I have given you some idea of the status of the Portland cement industry in Iowa, and I think that you will agree with me in saying that when all these mills are completed Iowa will be in a measure able to take care of herself.

As this may be my last opportunity I want to extend to you, the cement men of other States, my sincere thanks for the courteous way you have treated us, the cement-users of Iowa, and wish to add that when Iowa's supply runs low you are liable to hear the bell ring in your office on the long-distance 'phone, and as you take down the receiver to listen this sound will reach your ear: "Ship me quick a car of Portland cement to Grinnell, Iowa."

New Ohio Roofing Concern.

Columbus, O., Dec. 15.—The Queen City Roofing Company, Cincinnati, O., was recently organized with capital stock listed at $10,000, by Ralph O. Herrick and others.

Southwest Has New Organization.

Oklahoma City, Okla., Dec. 5.—J. I. Gray Roofing and Manufacturing Company was recently incorporated here; capital stock, $10,000. The incorporators are: J. I. Gray, I. V. Gray, L. V. Gray.

New Concern to Make Roofing.

Brooklyn, N. Y., Dec. 12.—Burger & Gohlke were recently incorporated for the manufacture of sheet metal work, roofing, etc.; capital stock, $15,000. The incorporators are: Edward Burger, 313 Sixth Street; Harry Berger, 379 Fifth Street; Wm. F. Gohlke, 46 Hansen Place, all of Brooklyn; also Charles Gohlke, Jersey City.

New Rochelle Company Organizes.

Yonkers, N. Y., Dec. 15.—The certificate of incorporation of the Rochelle Roofing Company, of New Rochelle, has been filed with the County Clerk at White Plains. The company has been capitalized at $10,000, and will conduct a general roofing and contracting business. The directors are Charles P. Blaney, Frederick R. Buell and Joseph Kelley of New York.

Concrete Shingles Are Used.

Waterloo, Ia., Dec. 1.—The roof of St. Mary's Parochial School has recently been reshingled with concrete shingles, the product of the Waterloo Concrete Roofing Company. When the school was erected it was covered with prepared roofing, but it was found necessary to change to the local product, which is much lighter in weight and is both fire and waterproof.

Side Talk

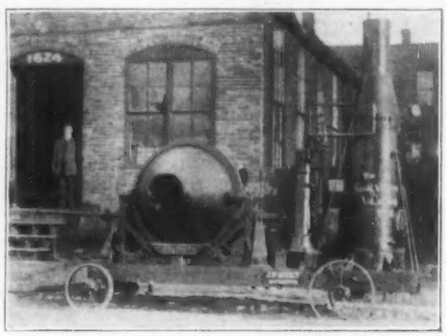
The Chattanooga Paint Company of Chattanooga, Tenn., claim for their "Eclipse" mortar colors that, as compared with ordinary colors, only one-half the amount is needed. No especial skill is required in mixing, but the more they are mixed the smaller will be the quantity necessary. They also call attention to their red oxide of iron paint, which is especially adapted for tin, iron or shingle roofs, outbuildings or any place where protection from the weather is desired. They say that they will be pleased to send sample and quote prices, etc., to readers of ROCK PRODUCTS.

The Century Cement Machine Company, Rochester, N. Y., will exhibit at the Buffalo Cement Users' Convention in January mixers, curbing and gutter outfits, and a very fine display of stone. The company will endeavor to show a proper method of making true concrete stone. They have just issued a handsome new catalogue, which will be distributed both at the convention and by mail. It contains 65 pages, and shows in many ways how the Hercules cement stone machines may be used. The Century people enjoy an excellent export trade, having sold to the largest firms in foreign countries. During the past few months orders for machines have been filled as follows: Shanghai, China, two; San Juan, Porto Rico, one; Sidney, Australia, one; Belfast, Ireland, one; San German, Porto Rico, one, Cairo, Egypt, one. G. B. Kerr has new in operation fourteen of the Hercules machines in his plant, the Artificial Stone Company, Egypt, and one at Trebizond, Turkey. In Dublin, Ireland, there is now being built a Roman Catholis church at a cost of $60,000, the walls of which are 42 feet high. The stone for this is being made on a Hercules machine, as are also the tracery windows. Today there are seventeen machines in operation in Ireland.

J. P. Hely is the popular representative of the Contractors' Supply and Equipment Company at St. Louis. His office is in the Victoria Building. The picture herewith shows him standing in the doorway of his warehouse. The grim-looking apparatus near hum is not a cannon, but one of the most efficient implements ever employed in the cause of peaceful industry—a Smith mixer.

An important feature of the Jeffrey swing-hammer pulverizers, made by the Jeffrey Manufacturing Company (Columbus, O.), is the heavy removable chilled linings, which make this machine practically indestructible. Other points of excellence are the screen bars and the renewable breaker plate. This V-top plate is peculiar to the Jeffrey crushers and serves to keep the material in the center of the machine. All the Jeffrey crushers and pulverizers are manufactured under fundamental patents owned, controlled and fully guaranteed by the company. They have just issued a new catalogue describing and illustrating their coal and ashes-handling machinery for power plants.

The Besser Manufacturing Company will exhibit at the National Show at Buffalo what is probably the most complete line of concrete machinery made today. They make a very wide variety of machines for every purpose, ranging from the small one-man machine to their big automatic tamper tile machine, and the prices, of course, correspond, some of their machinery being as low as $20. The automatic tamper tile



THE SMITH MIXER IN ST. LOUIS.

machine has brought them more testimonials than any other machine which they have ever put out. J. T. Lewis & Co., of Ustis, Florida, after the first half hour they had their automatic tamper tile machine, made tile at the rate of 1,500 per day, with one man to tamp and two colored boys to carry away the tile, which is a remarkable record, considering that this was a single-tamper machine. Mr. Lilles, also in Florida, made 4,800 tile per day with three men and four boys on a two-tamper machine, and the experience of other users has been similar. The Besser people also make another machine very different from most on the market in their face-down machine, which not only works very fast, but which makes waterproof blocks of a very wet mixture with very little cement.

The Sturtevant Mill Company (Harrison Square, Boston, Mass.) do not claim quite "fifty-seven varieties," but they do make thirty kinds of crushers, rolls, screens and grinding mills, and can therefore safely assert that theirs is the largest line built. Their catalogue, which will be sent to any reader of ROCK PRODUCTS who will take the trouble to write to them on his business stationery, will show the intending purchaser that they are able to fill any special as well as every ordinary requirement. Their steel rock-breakers and portable crushing plants are unexcelled. For their jaw-crushers they claim the full capacity of other makes at one-half speed, each revolution of the flywheel causing two crushing strokes. As durability and slow speed go together this advantage will especially appeal to users. The Sturtevant Company can supply coarse and fine screens, chute and revolving, as well as elevators and conveyors, at short notice.

The Sandusky Portland Cement Company, Sandusky, O., manufacturers of Medusa water-proof compound, report that that material was used in the following work: Concrete foundations and cement plaster coat on the light well in the new concrete office structure known as the Pacific Building, San Francisco; in the construction work in the new plant for the District of Columbia Paper Manufacturing Company, Washington, D. C.; by the Aberthaw Construction Company in concrete tanks and water filter for the Woronoco Paper Company near Boston, Mass.; for stopping leaks in the Illinois Tunnel Company concrete subway work, Chicago, and by James Stewart & Co., contractors, in the linoleum plant being constructed by them at Lancaster, Pa.

One of the most important concerns in the South in the distribution of building materials—cement, lime, plaster, brick, etc.—is the Carolina Portland Cement Company of Charleston, S. C. The company was organized in 1901, with a capital stock of $10,000. It has now a capitalization of $150,000 and its sales in 1906 amounted to $1,700,000. The company's business is principally in the states south of the Ohio and east of the Mississippi, and it has branches at Atlanta, Ga., Birmingham, Ala., and New Orleans. The officers of the company are: J. Ross Hanahan, president; P. G. Hanahan, first vice-president and manager; Frank C. Ford, second vice-president and sales manager, and J. S. Hanahan, Jr., secretary and treasurer. To the energetic sales manager, Frank C. Ford, is largely due the credit for the rapid and healthy growth of the company's business.

The Contractors' Tool Company, 704 Arch Street, a corporation of 1906, manufactures cement workers' tools, such as jointers, groovers, edgers, rollers, trowels, etc. They are pleased over the present trade situation and report business moving along in good style. They claim their tools are made of Konkurt metal, which will not rust like iron nor wear out and lose shape like bronze or aluminum.

The Richle Brothers Testing Machine Company, 1424 North Ninth Street, manufacturers of cement testing machinery, also engineers, founders and machinists, are an old established house and turn out what is recognized as standard machinery. They also have testing laboratories at this address and report business moving along in good shape.

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No display except the headings can be admitted.

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As sales manager or traveling salesman. Small salary with commission. Address "C. E. S.," care ROCK PRODUCTS.

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COMPRESSOR, DRILL, ETC.

One 540-ft. McKiernan compressor.
Two 3¼ McKiernan drills.
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1 complete Crushing Plant (7½ and 5), Austin Gyratory with power, new.
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1 No. 3 Comet Gyratory.
1 No. 4 Austin Gyratory.
1 No. 2 Gates.
1 10x18 Blake Jaw Crusher.
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Write for prices.
LET US KNOW YOUR REQUIREMENTS.
We install plants when desired.
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Old Colony Building, Chicago.

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For sale. No. 6 Gates crusher, engine and boiler complete, in No. 1 condition. Now in operation but too small for present use.

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Bucyrus 70-ton shovel (new)	9,900.00
New 10-ton American Tandem roller	1,500.00
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In Labrador; Quarrying Labradorite.

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R34

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Saves thousands of dollars in string and overloading of sacks.
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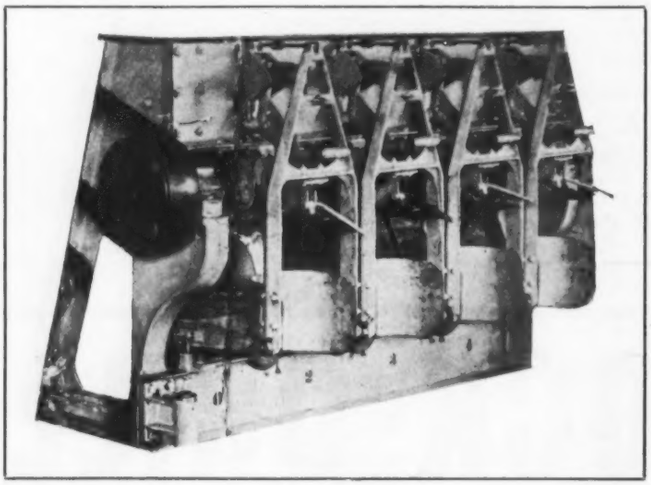

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FOR LIME, CEMENT PLASTER AND FEED

IN VALVE OR OPEN MOUTH

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TOLEDO, OHIO

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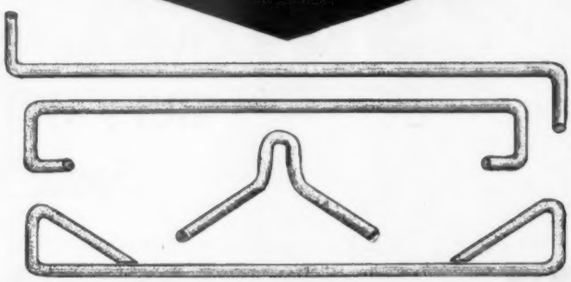

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CEMENT MIXERS
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Steam or Animal Power Brick Machinery

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MAURICE GANDY FOUNDER OF THE GENUINE RED STITCHED COTTON DUCK BELTING.

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For quarrying, cement grinding, stone dressing, and every other line of work where sand grit and water abound the ***Gandy Stitched Cotton Duck Belt*** has no equal.

It runs straight and true, grips like a chain on a sprocket, and lasts years where a leather belt lasts months. You'll be surprised to find how low the cost is. Send for catalog.

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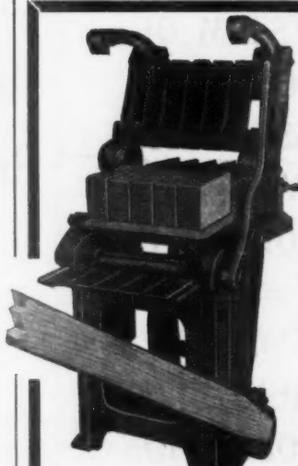

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The most secure fastening in concrete as well as in stone. Send for samples. **H. Farrington, 45 Broadway, New York.**

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FOR MAKING
Hard Plaster, Artificial Stone and Marble, Etc.
Without the use of gypsum, is of interest to all lime manufacturers
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GREATER CRUSHING AREA, hence GREATER CAPACITY.
NEVER HEATS. USES LESS OIL. WEARS LONGER.

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Monolithic Hollow Walls

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WE LEASE TO YOU ANYWHERE PATENTED

STEEL FORMS

ON LOW ROYALTY

Collapsible -- Adjustable -- Interchangeable -- Fit in Position on any Building

AFTER YEARS OF EXPERIMENTING AND PRACTICAL WORKING WE ARE PREPARED TO PROVE THAT

HAM'S METHOD

IS A BUILDING SUCCESS

ANY FINISH CAN BE MADE---ALL DONE AT ONE POURING
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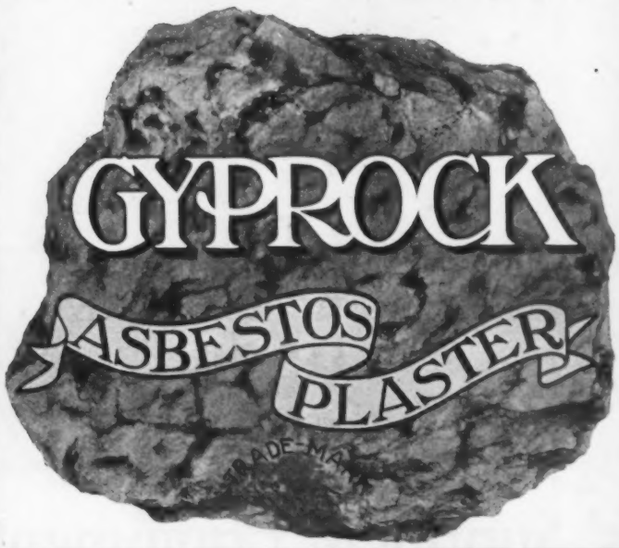
Monolithic Hollow Wall Co., MONOLITH BLDG., **New York**

THE NEW WALL PLASTER

Manufactured

FROM PURE GYPSUM ROCK AND ASBESTOS PREPARED IN BOTH NEAT AND SANDED FORM. ELASTIC—ECONOMICAL—PERFECT WALL PLASTER



Our Guarantee

WE GUARANTEE "GYPROCK" ASBESTOS PLASTER TO BE UNSURPASSED FOR STRENGTH, DURABILITY AND EASY SPREADING QUALITIES

FIRE-PROOF

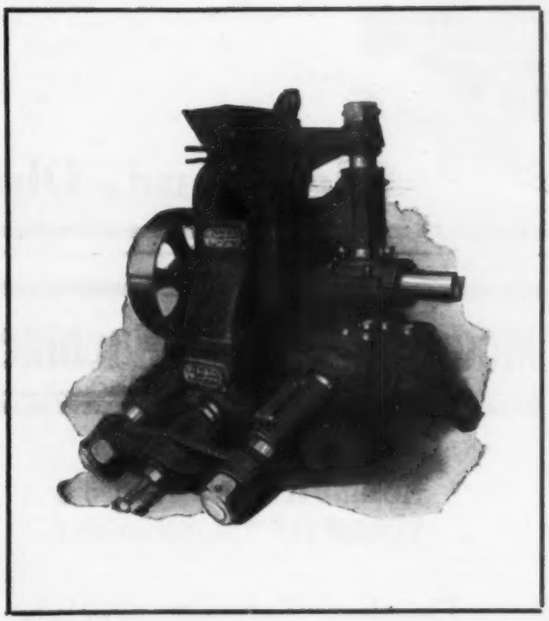
"IT SPREADS LIKE BUTTER"

WRITE FOR PARTICULARS

SANITARY

MANUFACTURED EXCLUSIVELY BY **WHEELING WALL PLASTER COMPANY** WHEELING W. VIRGINIA

THE KENT PULVERIZER



Takes one inch feed. Grinds to any fineness from 10 to 200 mesh.

GRINDS PER HOUR WITH LESS THAN 25 H. P

CEMENT CLINKER,	40 bbls.	to	98%	20	Mesh.
CEMENT CLINKER,	12 "	"	"	100	"
LIMESTONE,	2½ tons	"	"	200	"
LIME,	4 "	"	"	100	"
ROSENDALE CEMENT,	43 bbls.	"	90%	50	"
QUARTZ TRAP-ROCK,	4 tons	"	"	40	"

You can easily figure from this what a Kent Mill would save for you.

W. J. Bell, Esq. Supt.
Newaygo Portland Cement Co.,
Newaygo, Mich.
Says:—Four KENT MILLS are driven by one 75 H. P. motor.

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KENT MILL CO.

170 Broadway, NEW YORK.

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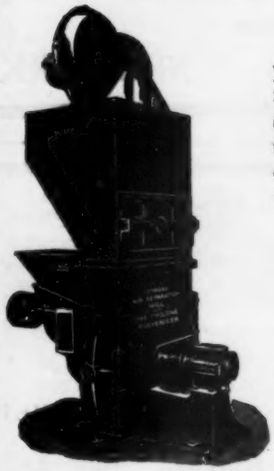
STROUD MILLS

OUTDO ALL OTHERS

In quality of grinding and in output per horse-power per hour on most kinds of work, and they grind for less money per ton.



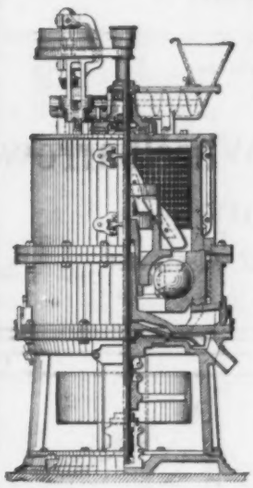
Our Air Separation Pulverizers produce direct from mill, any desired mesh, from say 40x40 down to the most impalpable powders, at will of operator, at a moment's notice. Dustless in operation. Do away with sieving entirely.

We build Screen Separation Mills too.

Catalogue on request.

E. H. STROUD & CO.

ENGINEERS & MANUFACTURERS
30-36 LaSalle Street, CHICAGO, U. S. A.



Fuller-Lehigh Pulverizer Mill

The Best Pulverizing Mill Manufactured

Exhaustive tests in all departments, in competition with the most approved grinding machines in use, have demonstrated the superiority of our machine.

OUR CLAIMS:
Greater Output
Better Fineness
Fewer Repairs
Dustless

Few extracts from letters received from users

"With the four we are now ordering we will have in use 16 Fuller Mills in all, and I think you can hope to get orders from us within the very near future for quite as many more."

"We have to say for your Fuller Mill that it is unqualifiedly the best grinding device we have ever tried on our lime rock and eminently satisfactory to us."

"We are pulverizing with one Ball Mill and four Fuller Mills sufficient raw material to produce nearly 1200 barrels of clinkers per day, which record I believe can not be approached by any other mill on the market."

If interested, write us for further information

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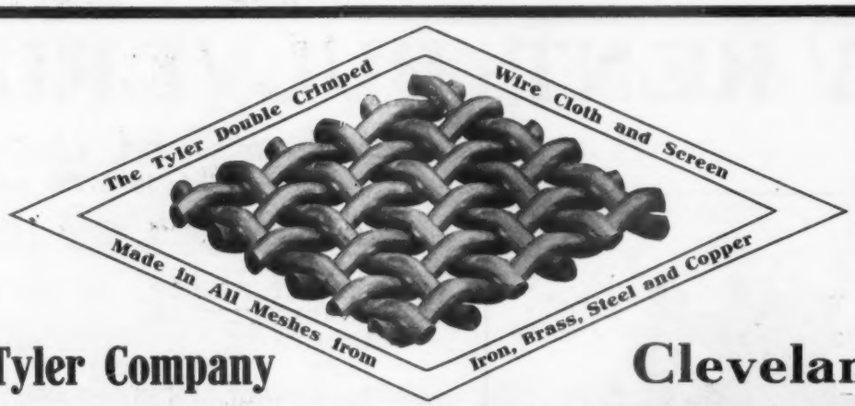
Main Office—Catasauqua, Pa., U. S. A.
New York, 111 Broadway Kansas City, Mo., Scarritt Building

The Tyler Screen is especially recommended for screening stone, sand, gravel, cement, lime, etc. It will stand extraordinary wear.



If you wish some clear, concise data on screens and their uses, send for catalogue "R. P." today.

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The All Steel Wheelbarrow for Feeding
Power Driven Concrete Mixing Machines
Has Not a Single Rival on the Market

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The Ohio Steel Wheelbarrow Company

No. 25-35 SOUTH ST. CLAIR STREET
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Modern Grinding Machinery

KOMINUTERS for granulating
TUBEMILLS for pulverizing

Davidsen Tubemill especially adapted for Sand-Lime Brick Work.

Silex Linings for Tubemills
Best Quality Dana Flint Pebbles
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PARKER
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And more are being added every week.
Does this remarkable record not mean something?

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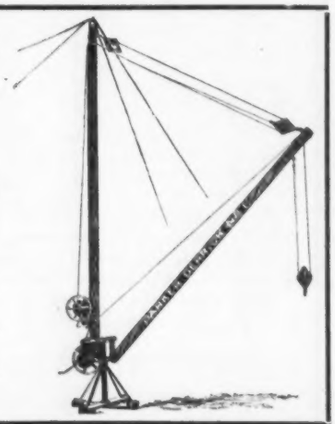

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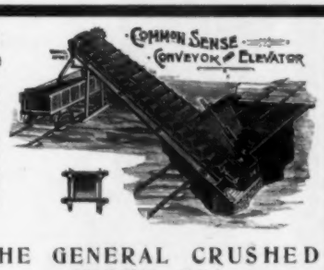

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So. Bethlehem, Pennsylvania,
have been using one of our **Common Sense Elevators** for six years—capacity 400 tons an hour.

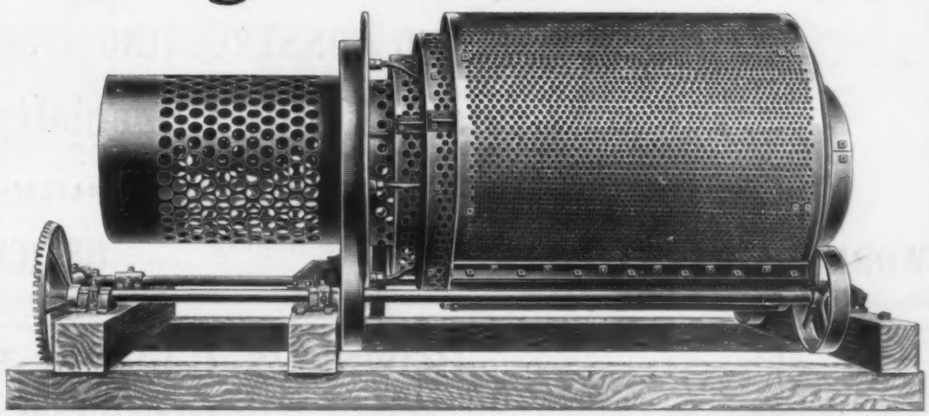
THE C. O. BARTLETT & SNOW CO. CLEVELAND, OHIO.

John O'Laughlin's Screen

For Granite, Stone, Sand, Gravel, Coal, Coke

Or Anything Requiring Separation

The Separation or Grading of Rock and Other Materials to Positive Sizes Made Easy



THE O'LAUGHLIN REVOLVING SCREEN reverses the old style method by introducing the material to be screened within a cylinder having coarse perforations, discharging instantly to a jacket with smaller perforations, which in turn discharges to another jacket with smaller openings, the same process being continued until five different separations have been secured as desired. The separation takes place at once on each of the concentric screens, so that the weight of stone in the screen is greatly diminished.

There is no wear on screening plates except in the matter of rejections. It requires only one-eighth of the horse power to run this screen in comparison with the older style of equal capacity. Can be adjusted to make three, four or five separations as ordered, determined by the size of the perforations in each section. The number of separations required makes considerable difference in the price of the screen. There are more square feet of screening surface in one of these screens than in two of the old pattern measuring 40" x 16', and certainly the wear on the screen is less than one-twentieth. Each section of the screen can be reversed, end for end, and thus it will last an indefinite time and should easily separate 300,000 cubic yards limestone without any repairs, as we use heavy material. The inside or longest screen is 8 feet long and 36 inches in diameter, the next concentric screen is 7 feet 6 inches long and 48 inches in diameter, the next screen is 7 feet long and 58 inches in diameter, the next is 6 feet 6 inches long and 66 inches in diameter. With the exception of the inner screen each section is adjustable, and the screen is complete without it. The figures above give 492 square feet of screen surface, which is equal to two screens of the old pattern, 16 feet long and 40 inches in diameter. The strongest features of the O'Longhlin Screen are its durability, great simplicity, light running and its adjustability for separating into definite sizes granite, stone, coal, coke, sand, gravel and similar materials.

Let me know your requirements, what material you have to separate, the amount daily and the different sizes required, and I will furnish a complete estimate of cost, power required, etc. Testimonials and further information for the asking.

EVERY SCREEN IS FULLY GUARANTEED

JOHN O'LAUGHLIN. Racine. Wisconsin

RAW MATERIAL GRINDERS

New Williams Universal

FOR TUBE MILL FEED

800 BARRELS 22 HOURS
95 PER CENT THROUGH 20 MESH
HORSE POWER 40 TO 50

WE ALSO GRIND
GYPSUM, LIME, COAL AND SHALE

Vulcanite Grinder

FOR ROLLER MILL FEED
TAKES MATERIAL FROM GYRATORY, DIRECT

CAPACITY 20 TONS HOUR
FINENESS ½ IN., ¼ IN. AND ⅛ IN.
HORSE POWER 30 TO 35
1,200 MILLS NOW IN USE

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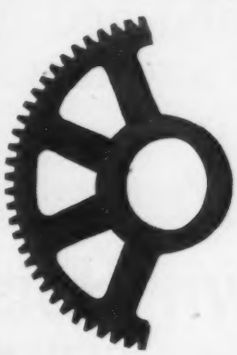

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Is a common expression when speaking of gears—Why not get the genuine?

If in a hurry, wire us

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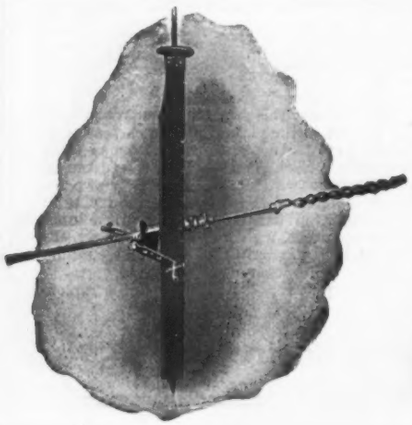
DESIGNING AND CONSTRUCTING ENGINEERS

Cement Plants a Specialty

REPORTS, EXAMINATIONS AND ANALYSES ON RAW MATERIAL FOR CEMENT

WORKS: FULLERTON, PA. CONSULTATIONS SOLICITED **OFFICES: ALLENTOWN, PA.**



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for boring anything that an Auger will penetrate.

Awarded Gold Medal, St. Louis.

We make 40 different styles machines run by Hand, Compressed Air and Electricity for boring Fire Clay, Coal, Rock, Rock Salt, Gypsum and Plaster Rock. Send to day for our handsomely Illustrated Catalogue.

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"Brownhoist" Locomotive Crane

Equipped with clam-shell loading bucket offers the greatest capacity as well as economy for handling sand and gravel in the pit. Crushed stone and screenings loaded and rehandled at minimum cost.

Advance Your Profits by Increasing the Output.

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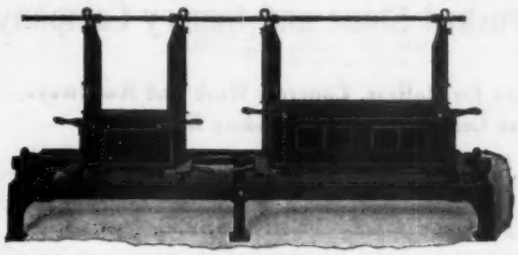

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Face Down—
Wet Mixture

The Hercules

The Fastest, Simplest, Strongest Concrete Block Machine Made

The Hercules is known as the real concrete block maker.

With this simply constructed machine you can make **real** concrete blocks, ranging in size from 2 in. to 6 feet in length. Besides perfect blocks you can make water tables, sills, lintels and steps.

The Hercules is built so strongly and so mechanically perfect that it never gets out of order, and can always be depended upon at critical times to properly perform its duty.

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We know that it will be to your advantage to get this catalog before you buy elsewhere—ask for Cement Tool Catalog—it's free.

Hercules Concrete Mixer

This new mixer will be on exhibition at the Buffalo Convention, Jan. 20 to 25.

It is the simplest and most accurate mixer made—ask us about it.

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Century Cement Machine Co.

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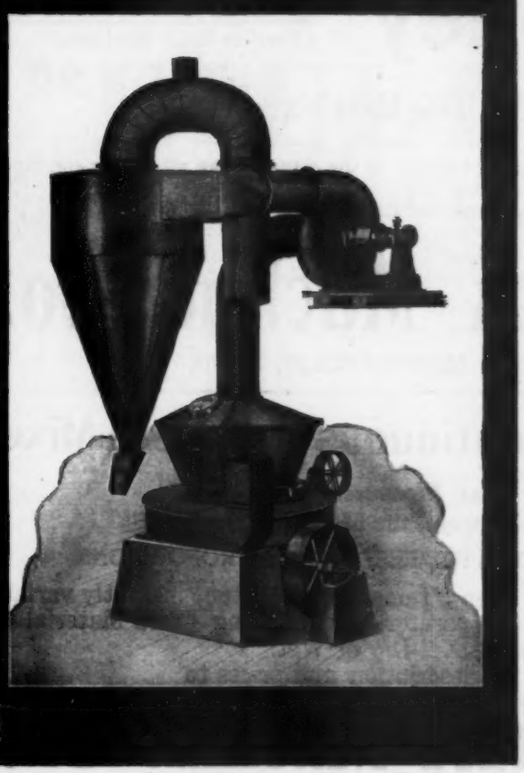

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Is not all that

THE RAYMOND SYSTEM OF AIR SEPARATION
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In every case where this system has been installed it has proven itself an economy not only in the actual grinding and separating of materials reduced to powder but in saving money or improving the work of other departments of the factory. The reading of our book may surprise you as to what we can do for you.

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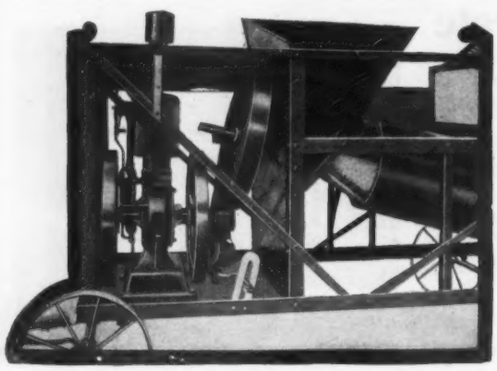

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On a 5 mile sewer job the contractors estimated that they could save $2,000.00 in moving expenses alone by using the LITTLE GIANT, besides putting in the work at 50% the cost with any other machine. Isn't it about time you "got wise" and saved some of the good dollars you are paying out. ONLY RESULTS count. CLAIMS of manufacturers amount to nothing.

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BALLOU MFG. COMPANY, 35 High St., Belding, Mich.

The people who use the "Peerless" know its profit making qualities.

We will send you a list of the concerns who have already made money by doing business with us, if you wish.

Make Money

As others have already done it, by making Cement Brick upon a Peerless Brick Machine.

The **Price is Right.** *The* **Brick are Right.**

More Peerless Machines now in use producing a profit to the owners than all others combined.

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The Standard Continuous Concrete Mixer

"The Mixer that Measures and Mixes."

"You fill the Hoppers, the Mixer does the rest"

CONTINUOUS, AUTOMATIC, FEED EXACT PROPORTIONS.

Materials first Dry Mixed, then "Tempered." Output instantly variable from 0 to Maximum at will of operator, thus insuring Fresh Material for each Block. Feeds Sand and Gravel Dry or Wet.

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Concrete Knowledge

Will Be Handed Out at

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The National Cement Users' Convention

Is an Opportunity Forever Lost to Those Who Do Not Attend

IMPORTANT SIDE ATTRACTION—SEE NIAGARA FALLS IN WINTER.

The Natural Greatest Curiosity in the World.

Ready November 7.

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By Frank B. Gilbreth

This book is written by Frank B. Gilbreth, one of the largest general contractors in the world, and contains 200 pages of rules and instructions for the guidance of the foremen and superintendent. The book in its present form, is the outgrowth of Mr. Gilbreth's twenty odd years of experience in the contracting business, and embodies scores of suggestions for economizing and for increasing the output of the men on the job. There may be a few who read this announcement who do not know that Mr. Gilbreth is the contractor who has made the "Cost-plus-a-fixed-sum-contract" famous; in doing so he has likewise made famous Gilbreth's "Field System", only a few excerpts from which have heretofore appeared in print.

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If you want sample pages, circulars or catalogs covering any class of books for engineers, architects, contractors or railway men, send us a postal card.

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DON'T LOOK

ANY LONGER FOR AN OPENING TO MAKE MONEY
HERE IS YOUR CHANCE. BUY A

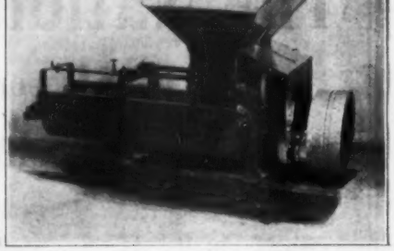
SCHENK

CEMENT DRAIN TILE MACHINE

There is more money made making tile with this machine than in any other kind of concrete work. We guarantee it to make from three to five thousand tile in ten hours, with five men and a 10-horse power engine to run it. Remember this is THE ONLY PRACTICAL CEMENT TILE MACHINE ON EARTH. HAVE YOU SEEN IT? MEET US AT THE CHICAGO CEMENT SHOW DECEMBER 17 to 21, where we will have on exhibition our

SCHENK TILE MACHINE AND OUR PERFECTION CONCRETE MIXER

This mixer is unexcelled for any class of concrete work. But for brick block and tile it is a mile ahead of them all. Come and see us or write



THE CEMENT TILE MACHINERY CO.

MANUFACTURERS OF CEMENT WORKING MACHINERY
22 Roth Street - - - WATERLOO, IOWA, U. S. A.

The American Sandstone Brick Machinery Company,

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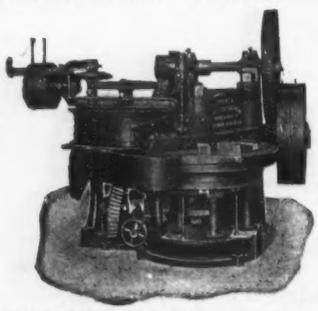


Improved Saginaw Rotary Presses are now being built right or left hand, with extra table for making face and fancy brick, on which double pressure is exerted. Our patented brush does the work of one man, and keeps the plunger plates clean.

DON'T confuse our practical system with the so-called Scientific Systems. We confine ourselves to the manufacture of machinery for making brick from sand and lime; installing the complete plant, starting and operating at our expense until at least 100,000 brick are made before asking for a settlement.

Our Plants are installed under the supervision of practical engineers who know how Sand-Lime Brick should be made, and can be made.

We have practical plants running successfully, to show to prospective investors.

We are Not Scientists.

We produce results, because **we are the oldest practical Sand-Lime engineering company doing business in the United States,** and **we defy contradiction.** Incorporated April 1902.

In our Warerooms of 33,000 Square Feet Area, we carry 40 different kinds of machines used in the Concrete Block Industry and Associated Work. We have Hollow Block Machines from $21.00 up, the prices varying according to the outfit and grade. They include the most perfect machines ever produced. Our several types of Concrete Mixers are the best that money will buy.

OUR OFFER:—In order that you may carefully examine our complete lines and choose just what you want, **we will gladly pay your railroad expenses** and practically operate any or all of the machines in our demonstrating department, then if we cannot satisfy you fully as to their merit and price **we will pay your fares just the same.** Or, if you purchase a machine direct we will send a practical demonstrator to start your plant.
Write us today for our 80 page Catalog. Department C.

The United Cement Machinery Manufacturing Co.

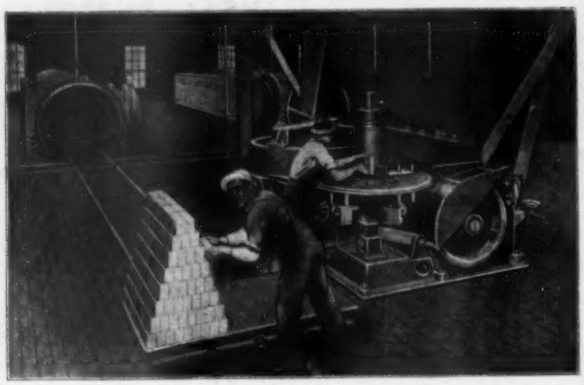
Maple and Front Streets **COLUMBUS, OHIO**

The Cleveland Brick Machinery Co.

Wickliffe, Ohio.

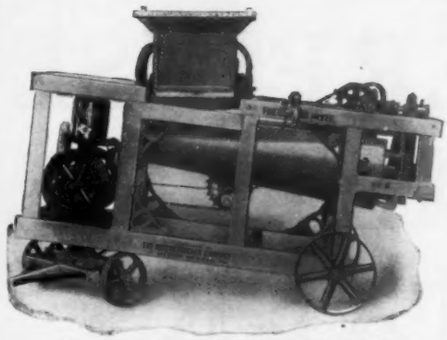
Manufacturers of

Sand Lime Brick Machinery Only



We claim to have the finest Sand Lime Brick Press that has yet been brought out, and we are sure we can convince you if you will see our machinery in operation.

Designers and Builders of Sand Lime Brick Plants.



THE IMPROVED COLTRIN CONCRETE MIXER

RESULTS COUNT—NOT THEORY

READ—THEN WRITE US

Ann Arbor, Mich., Aug. 22, 1907.

The Knickerbocker Co.,
Jackson, Mich.

Gentlemen:—

I have been operating one of your No. 6 Coltrin Mixers on general concrete work since last February and would not sell it for three times its cost if I could not immediately get another like it. The Mixer has never given us any trouble, have not had to lay out one cent for repairs, and has saved me fully 25% in cement used since starting it last spring while giving a better and stronger concrete.

Yours truly,
E. R. Schaffer.

Bluffton, Ind. Oct. 18, 1907.

The Knickerbocker Co., Jackson, Mich.
Gentlemen:—

We have run the Mixer every day since it arrived, except Sundays, (about 10 weeks) and it is still going. We have had five superintendents and a chief engineer over us, and not a word of complaint as to the mix. We run 80 yards of concrete, one part cement, two parts sand and four parts crushed limestone, in 10 hours with 7 men and I do think on a bet, I could do 100 yards with the same men. I don't believe another Mixer will do it with so small a number of men. Anyway, I would not trade her even up for any other Mixer on the market.

Yours truly, N. T. Miller & Son.

Investigate for Your Own Satisfaction

Complete literature mailed for the asking

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NEW PORCH COLUMN & BALUSTER DESIGNS

Exceptionally beautiful and attractive. The outfit is thoroughly practical and makes a splendid porch. Buy one and increase the profits of your business. Hundreds in use. Price for outfit very reasonable. We also manufacture Block Machines ranging in price from $50 to $250. Concrete Mixers, Brick Machines, Silo Machines, etc. Write for catalogue.

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PERFECTION IN BLOCK MAKING

If you wish to attain this you should combine these three important features:

Wet Process Face Down Damp Curing

The **PETTYJOHN INVINCIBLE** Machine does this, and is the only machine that does. Tandem Invincible makes two blocks at once. Price $65.00 and up. Single Invincibles, $35.00 and up. With our **Triple Tier Racking System** green blocks can be stacked three high direct from machine with inexpensive home-made rigging. Plans and blue prints free to customers. It economizes space, reduces off-bearing distance and above all insures slow, even, damp and perfect curing and bleaching.

Write for our latest edition of **"Stone Making,"** a book of valuable data, just off the press—**FREE.**

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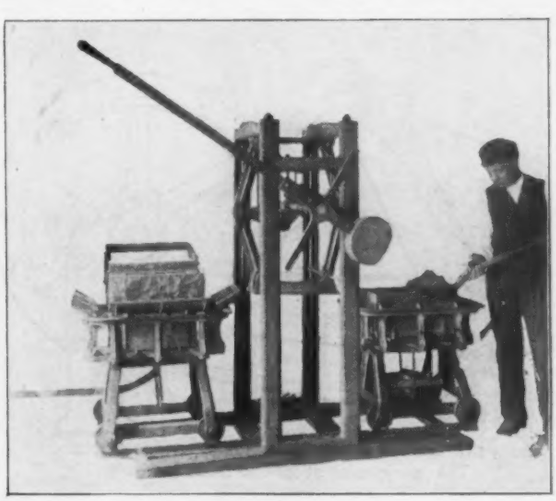
Somers' Pressure Block Machine



You are looking for the machine that will make you the most money. Our sales are principally to persons who have started into the business and have learned just enough about the great possibilities of the block business to be convinced that if they can get a machine that is speedy and at the same time one that will make any block the architect may call for, their financial success is assured.

The Somers' Machine will do it. 3 cents saved in labor on every block because of its great speed. Two machines operated successfully under one Press, thereby doubling the capacity. Operated automatically by levers. More moderate in price than the common Hand Tamp outfits. **Write for our Catalogue and prices.**

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Why You Should Buy the Eureka Side Face Block Machine

It will make cement blocks cheaper than any other machine. Fully automatically controlled by one movement of the lever—**no work but tamping.** Few parts—nothing to get out of order. **Instantly interchangeable for all size blocks.** Very rapid—very easy to operate.

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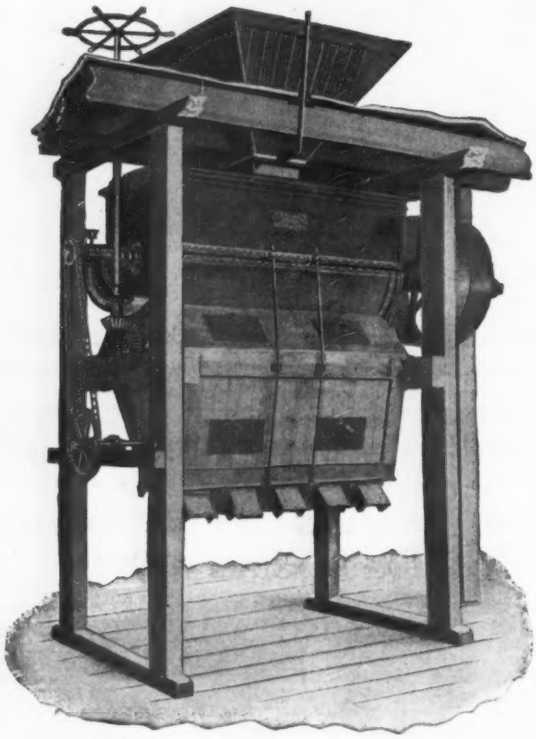
Makers of the most complete line of concrete machinery on the market.
313 Second Street ALPENA, MICH.



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For Mixing Hair Fibre, Wood Fibre and Retarder with Dry Plastering Materials.

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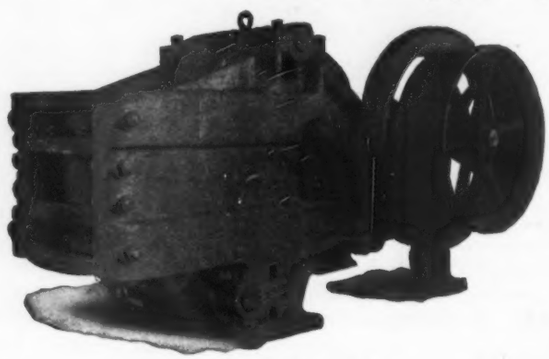
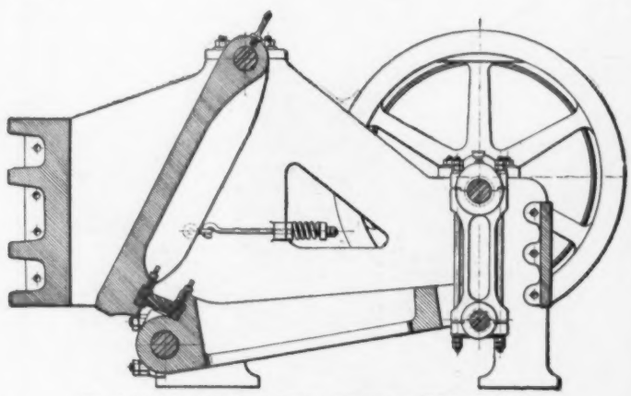
Jaw and Rotary Crushers for Gypsum, Reels, Vibratory Screens, Hair Pickers and Transmission for applying power.



EHRSAM NO. 4 JAW CRUSHER.

This machine will handle large chunks and reduce from 30 to 40 tons of Gypsum per hour to 2½-inch maximum or smaller if wanted.



NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.
The jaw opening at inlet is 18x28 inches.

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Enterprise, Kansas

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of manufacturing a uniform and thoroughly reliable stucco

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Our electrically equipped mines and mills are now in operation with a capacity of 300 tons per day, we assure you of prompt service.

Mines and Mills: Oakfield, N. Y. **General Offices: 597 Michigan St., Buffalo, N. Y.**

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High Grade Stucco. "Anchor" Cement Plaster.
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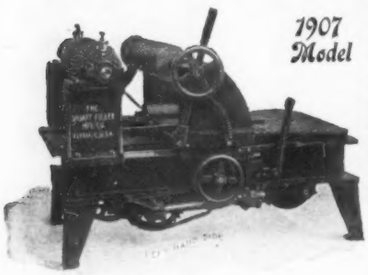
Tell 'em you saw it in ROCK PRODUCTS.

The Leonard Wood Fiber Machine



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Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 80 per cent as do the ordinary non-increasing feed machines. Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

The Shuart-Fuller Mfg. Co.
Successors to
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Yours truly, GUARANTY WOOD FIBER PLASTER CO., Chattanooga, Tenn

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Make Plaster that Gives Satisfaction.

Try a car and be convinced

We have six mills and can always fill orders

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Quality, Price, Shipping Facilities, and Prompt Attention, Unexcelled by any. Drop us a line for Prices.

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The Brand that's Made from Pure Gypsum Rock.

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Plaster! Plaster!

IOWA HARD PLASTER CO.

HARD BY NAME
HARD BY NATURE
HARD TO BEAT
NOT HARD TO GET

IOWA HARD PLASTER CO., Ft. Dodge, Iowa.

KING'S WINDSOR CEMENT
FOR PLASTERING WALLS AND CEILINGS

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J. W. VOGLESONG, GENERAL MANAGER.
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Finest Line of Gypsum Machinery
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KETTLE CRUSHER NIPPERS

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Best Mills in the United States Have Them

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STUCCO—Lycoming Calcining Company

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Enlarged, Re-equipped, Better and Larger than ever. Capacity, 250 tons per day. First Stucco mill built at Garbutt. Now located on two R. R. systems. Shipping facilities unsurpassed. Ten wall plaster Companies now using our Stucco exclusively, under contract. Write for price.

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KALLOLITE CEMENT PLASTER

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NO KETTLES USED

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Great Saving in Cost of Manufacture and Quality of Product Guaranteed.

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In the "lime" light of experience—i. e.—in the light of **lime** experience, the careful builder of the present will eschew all suggestion of familiar lime troubles by building his plastered walls with modern hard plasters and particularly by **finishing** with

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The Finish Without Lime

No plastered wall is as good as it might be, which is not builded with U. S. G. Hard Plasters **and finished with "Universal."**

No Architect who desires to maintain a distinguished place and prestige in his profession, can afford to neglect specifying "Universal" for the final plaster coat—particularly in the better class of residences and buildings.

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No Builder who wants things right, will jeopardize the life and beauty of his expensive mural decorations, by not insisting on an "Universal" finish—when he knows about it, and the majority of good builders do.

No Material Dealer Can Afford

not to carry and actively push "Universal"—if he be building his business for the future—if he value the reputation of being modern and alert—if he desire to hold old customers and **create new business with new commodities**—if he desire to **eliminate stock shrinkage** and **make more money with less labor and expense** on finishing materials.

We Help The Dealer Sell "Universal"

by supplying him generously with the snappiest, brightest kind of instructive and convincing Advertising Matter—a class of Advertising Literature such as will do him credit, when put into the hands of the most select home owners, bearing his own advertisement.

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United States Gypsum Company
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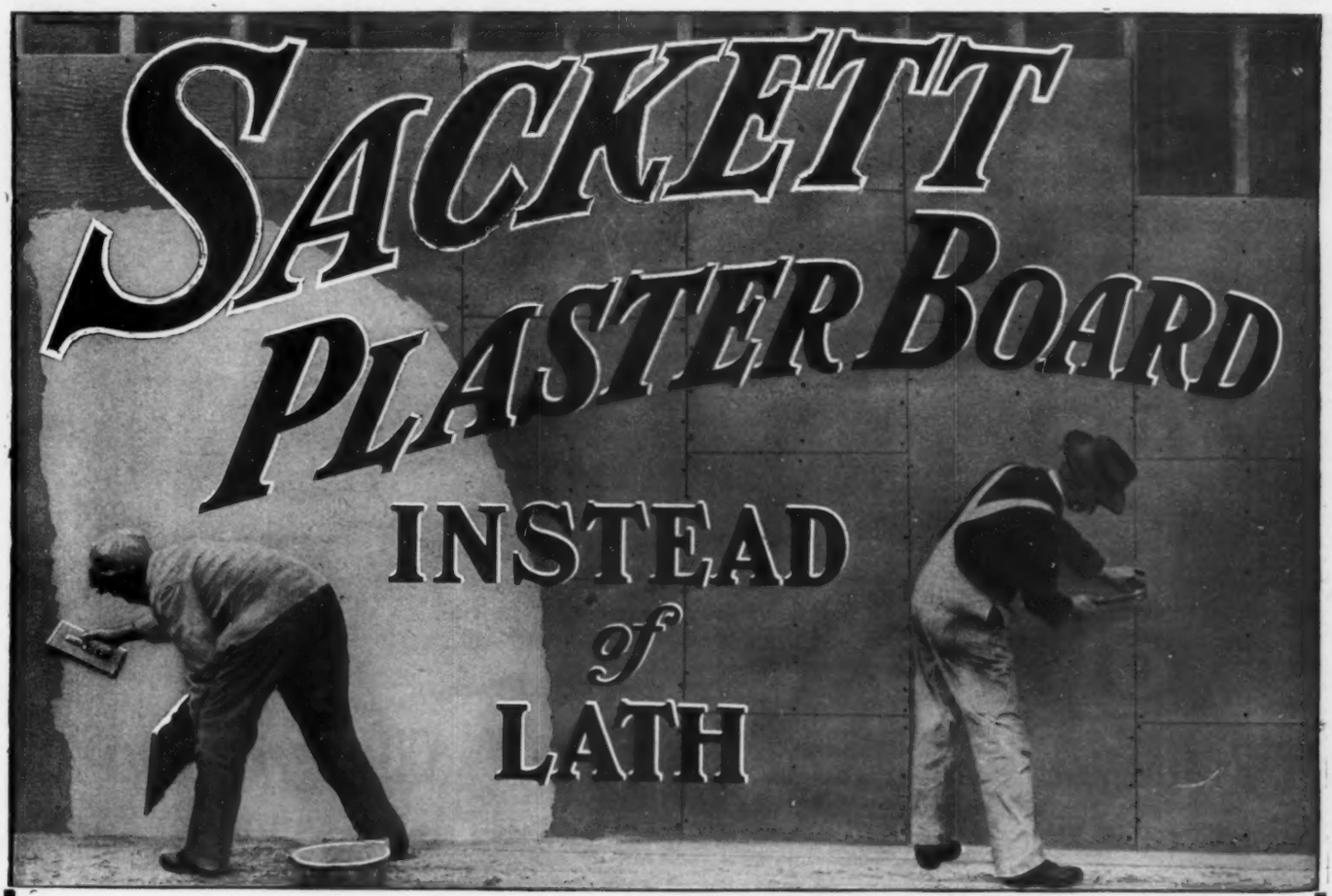

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Sackett Plaster Board does the work of lathing, fire-proofing and partial plastering in one operation.
The cost is little or no more than good work on the ordinary, antiquated wood lath. *The results are quicker and better in every way.*
Sackett Plaster Board comes in sheets 32″x36″. These are nailed direct to the furring, studding or beams, and the finishing plaster applied.
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The Owner, the Architect, the Builder, and the Landlord are interested in the economy and betterments of its construction.
Carried in stock by up-to-date building material dealers everywhere.

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HOTEL GRISWOLD, NEW LONDON, 14½ Acres of Sackett Plaster Board used in it's construction. R. W. Gibson, Architect.

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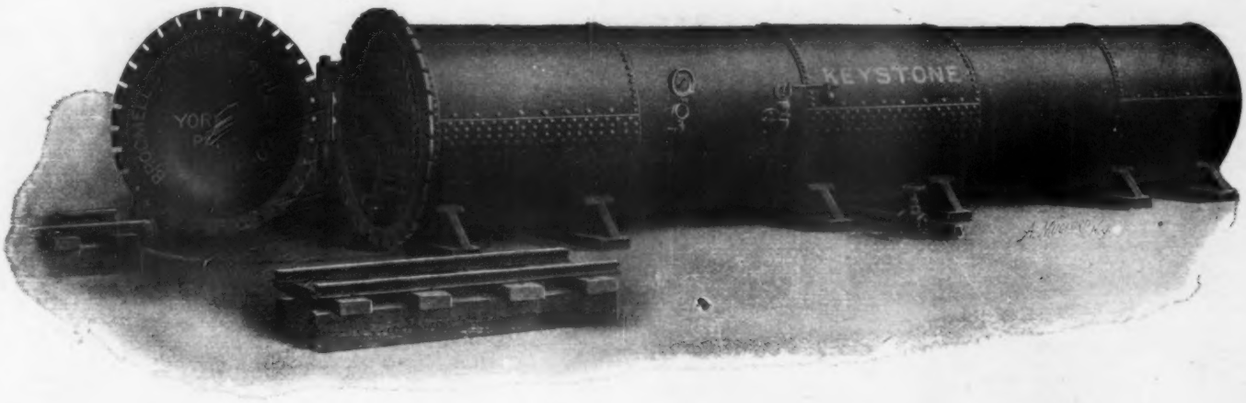
BINS, ELEVATORS, CARS, HYDRATING MACHINES.

SPECIAL WORK OF ANY KIND BUILT FROM BLUE PRINTS.



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for soft rocks, burnt lime, etc.

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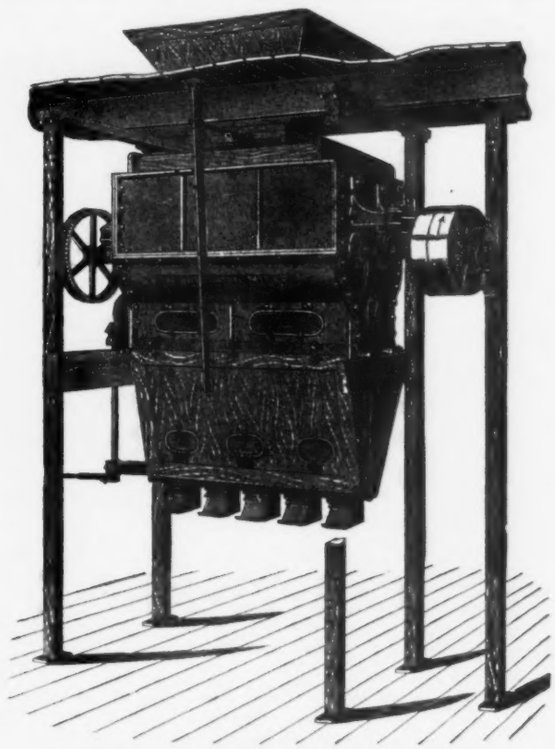

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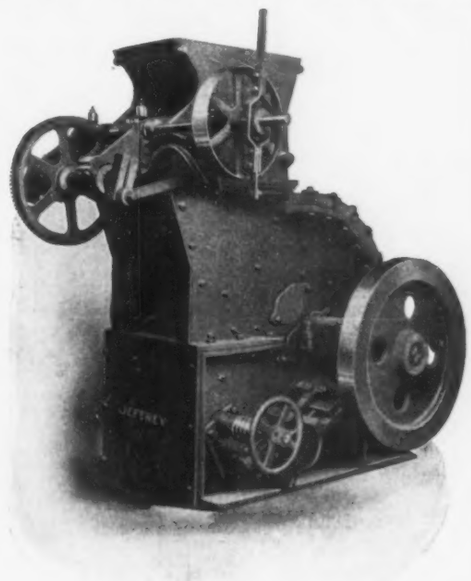

Equipped with Automatic Feed, Worm Gear and Screw Lowering Device.

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Free Crushing Tests.

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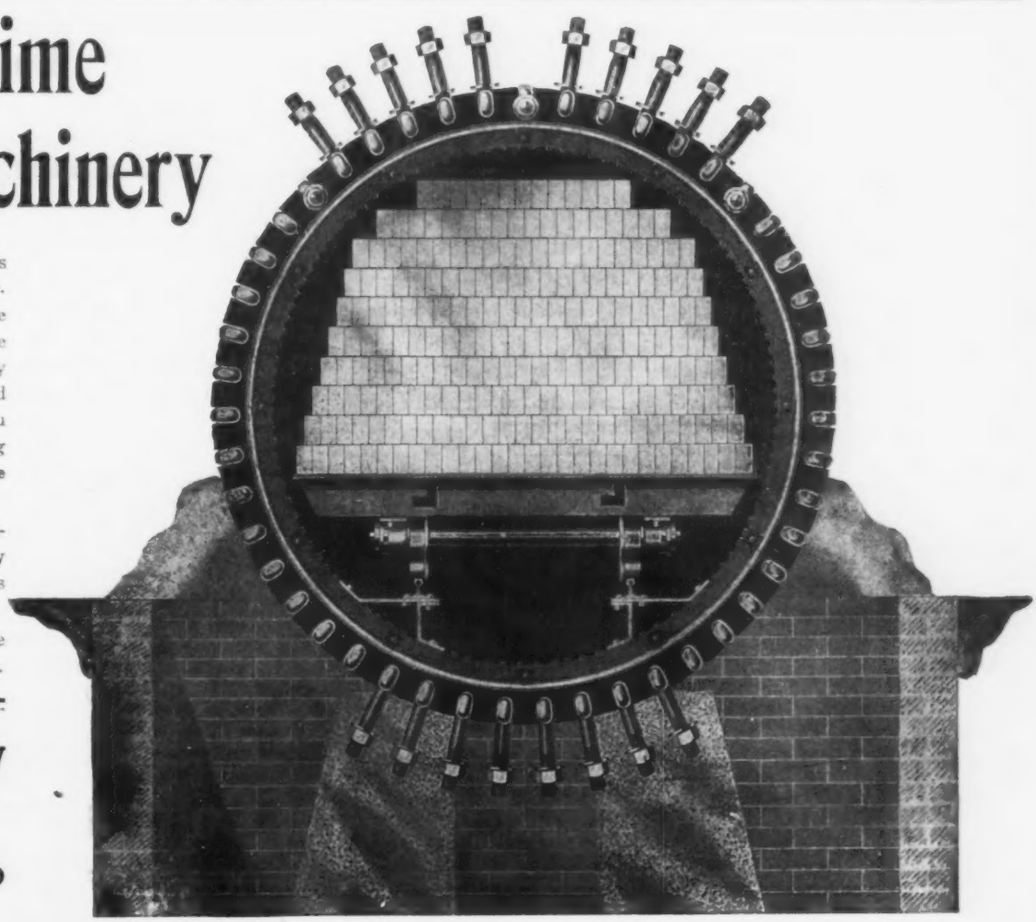
Sand-Lime Brick Machinery



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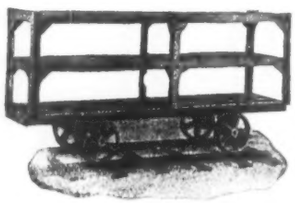
For Quarries, Mines, Cement Works, and General Use. Also Dumping Buckets, Stone Carriers or Skips, Wheels and Axles.



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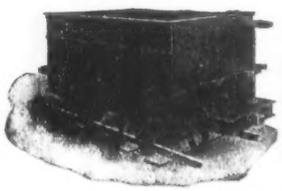

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GIANT PORTLAND CEMENT

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"CONCRETE CONSTRUCTION about the HOME and on the FARM,"—a book containing directions for making and handling concrete, also many specifications, sectional drawings, and photographs of the smaller constructions that can be built by the layman without skilled labor. Paper bound copies, free upon request. Cloth bound copies. Each..... $0.25

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